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THE

CIVILISATION OF OUR DAY

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THE
CIVILISATION OF OUR DAY

A SERIES OF ORIGINAL ESSAYS ON SOME OF ITS MORE IMPORTANT PHASES AT THE CLOSE OF THE NINETEENTH CENTURY

By EXPERT WRITERS

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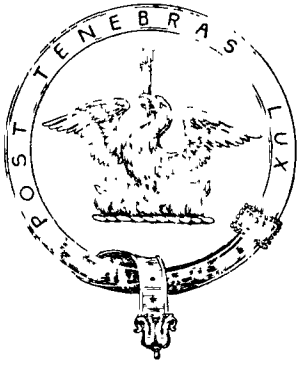

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THE CIVILISATION OF OUR DAY

PART I

INTRODUCTION

THE GENERAL PROGRESS OF THE CENTURY

ESSAYS I.–VI

THE UTILISATION OF NATURAL PRODUCTS AND FORCES

THERE are few things more elevating than to withdraw oneself for a brief period from the activity of human life, with its hopes and fears, joys and disappointments; to quit the seething crowds striving for the acquisition of wealth, power, and such honours as men are able to confer, or, with the vast majority, struggling for the bare necessaries of life; and, from a somewhat higher standpoint, to note the direction in which the mass of mankind is moving—to see whether or not a general advance is being made by our race towards a higher life and nobler ideals than those of its daily aspirations. A fitting time for such a survey is when the century is drawing to a close; and, without assuming to be infallible guides, we would invite our readers to join us in such an inquiry, directing our attention mainly to the advances which have been made during the latter half of the century, although, for purposes of comparison, it may be desirable from time to time to refer briefly to a somewhat earlier period.

It would, of course, be impossible within the compass of a

volume to treat of every phase of civilisation, or indeed to do more than touch upon some of its salient features, and the Editor of these pages would never have had the temerity to venture upon the task, even so limited, were it not for the hearty co-operation of experts who have made a special study of the various departments of human labour and intelligence which are involved in the inquiry. For it is only necessary to make mention of a few of those subjects to show that a whole library and a lifetime would barely suffice to treat them all thoroughly. The progress of the race and the extension of civilisation have been effected during the present, and in some instances preceding centuries by exploration and pioneering, followed up by colonisation; by military and naval expeditions; by the peaceable or enforced abolition of slavery and slave-trading; by the discovery and utilisation of the earth's productions; by new and useful inventions, or improved mechanical contrivances already in use; by increased facilities for transit by land and sea; by postal communication and the electric telegraph and telephone; by the advances which have been made in hygiene and sanitary science; by improved dwellings, food, and clothing for the poorer classes, and through the attention which has been paid generally to the condition and habits of those classes by the whole of society in civilised States, and missionary efforts amongst more or less untutored races; by the movement for the emancipation of women; the care of children; the extension of education everywhere and in all classes; by cheap and instructive literature and lectures; free libraries and museums; very largely by the daily press and periodical literature; and last, but not least, by extended intercourse between the nations of the world, the result of cheapened travel, international congresses, and industrial exhibitions.

These are a few of the many modern agencies whereby the progress of mankind has been effected during the present century; and to these and a few other cognate subjects we shall do our best in the following pages to direct the reader's attention. But in order to clear the way for a more detailed

inquiry, it is necessary that a brief passing reference should be made to one or two matters affecting the state of civilisation which come within the province of the historian of nations rather than under a general survey of the world's progress. One of these consists in the dynastic and political changes which have occurred during the century amongst the more advanced nations, especially those of the European Continent—changes which have in some instances retarded, in others expedited the advance of civilisation. The most important factor which has temporarily or permanently affected the destinies of nations has been the ambition of princes and rulers, or even of whole peoples. This has often kept smouldering the embers of international hatred and jealousy, causing them from time to time to burst into flames of war, and spreading devastation over great portions of our Continent; but to follow the shifting scenes of war and diplomacy during the century would here be impossible, even if it were necessary for our purpose. The relations between two States, for example, such as France and Russia, sufficiently illustrate the kaleidoscopic character of international politics. Early in the century the insatiable ambition of the first Napoleon entirely changed the face of Europe for a time, and at one period of his remarkable career he met the Czar of Russia with the object of arranging for the partition of the Continent between them. Shortly afterwards that same Napoleon entered Moscow at the head of an invading army, only to beat an ignominious and fatal retreat; and within two or three years of that time again, the Czar marched into Paris with his allies, and helped to seal the fate of his conquered enemy. About the middle of the century, another Napoleon having seized the reins of power in France, a second, and in this case a more successful expedition was undertaken against Russia; and one would have imagined that these three inroads into each other's territories by what are not even neighbouring States would have raised an insurmountable barrier against all friendly intercourse between them for centuries to come. But what do we behold to-day? A *rapprochement* of the most gushing description, an alliance

between republicanism and despotism, engendered by the thirst for revenge and the desire to recover forfeited possessions on the one side, and to carry out a traditional policy of aggrandisement on the other; an alliance which would long since have caused the clouds of war once more to burst over the European Continent but for the existence of another league still more powerful, bent upon maintaining the peace of Europe. Similar changes and vicissitudes, arising in most cases from ambition or self-interest, have occurred in connection with other States, such as Prussia and Italy, during the century; nor would it be wise, whilst claiming to have played an important part in furthering the progress of our race, that we should remain blind to the aims of our own policy of aggression. Not many years since, the Czar of Russia announced to the world that he had only one friend and ally in Europe, a petty Balkan prince of absolutely no moment in European councils; quite recently a British statesman made a boast of *our* "splendid isolation"—a greatly exaggerated pronouncement—and in both cases the alienation was the result of aggressive tendencies. To-day, however, the whole civilised world is bowing at the feet of the great White Czar, every Government vying with its neighbour in the magnificence of its mission to attend his Coronation.* What has caused the change in sentiment towards the type and personification of despotism it is difficult to say; but we know that any truth there may be in our present isolation is traceable to our unwillingness to "live and let live;" our determination to condone or treat lightly the evil deeds of our own subordinates, whilst we are ready enough to denounce and condemn the same acts when done by the agents of other States; and our desire for the further extension of our already overgrown Empire in every part of the world.† Many other examples might be noted of the instability of international

* This was written before the Coronation, with its awful sacrifice of human life.

† Although, as above stated, it would be impossible in this place to treat in detail of the political history of the world during the century, we have endeavoured in an Appendix (III.) to show at a glance, for future reference, the present resources of its leading States, and have there ventured to present, along with the needful statistics, a few words of comment upon their political condition.

alliances, of the more or less successful attempts which have been made by nations in both hemispheres to wrest territory from each other, and of the oppression practised by autocratic and military rule; but in the long-run it will be found that, war and the ambition of princes notwithstanding, the number of free States is increasing, and the liberties of existing ones are being extended; whilst, as an antidote to the curse of war, which has been practised from time immemorial, there is growing up a desire to settle international disputes according to the dictates of reason and equity rather than by the exercise of brute force. The establishment of international Courts having that object, which are a birth of the close of our century, will receive fuller consideration in the sequel.

The most effective method of dealing with the general spread of civilisation during this century would, perhaps, have been simply to draw the reader's attention to the two maps which have been prepared with that object (Maps I. and II.), and to leave him to form his own impressions from their inspection. That, we propose to do with as little comment as possible; but it must be understood that, whilst the maps are intended to convey to the reader's mind the more important advances which have been made during the century, they do not profess to show all the minor changes, nor to be strictly accurate as maps of reference. In the one which represents the general condition of the world at the close of the eighteenth century large tracts are shown, the dark shading of which indicates that they were either absolutely unexplored or were inhabited by savage races. A comparison of the parts so shaded with the same regions in the map representing the present condition of the known world indicates not only where, but by what nation the veil of barbarism has been raised, and with that object the respective mother countries and their colonies are coloured alike.*

* It is due to Mr. John Bolton, the manager for Mr. E. Stanford, the artist of these maps, as well as of the one representing the railways, &c. (III.), to say that he has not only followed out the Editor's directions, but has shown much originality in doing so, and has helped the Editor with useful information. And it may also be mentioned, as germane to the general plan of this work, that amongst

And now, referring to some of the results of the century's progress, as shown upon our maps, it will be seen that a hundred years since civilisation had not penetrated to the western portions of North America, which were still in the occupation of the Red Races. In like manner, numberless tribes of Indians held the central and southern parts of South America. In the Northern Continent the United States, some of which are in the very forefront of civilisation, now hold sway side by side, in Canada, with their cousins, also of British origin and speaking the same language. At the close of the last century the United States numbered a population of about two and a half millions; to-day they embrace an area of three millions of square miles, peopled by upwards of sixty-two millions of inhabitants, nearly all of European origin. With a similarly extensive area, however, our own dominion of Canada can only reckon about one-twelfth of the inhabitants of the United States.

Central and South America, at the end of last century, were almost completely divided between the Roman Catholic powers, Spain and Portugal, and were governed by a number of viceroys. Now the continent consists of a series of independent republics, formed or supported by European Powers. Indeed, with the exception of the Dominion of Canada in the north, and British Honduras and the Guianas in the south, both continents of America are now Republican. To discuss the chances of the few remaining States following suit during the coming century would be too hazardous a speculation, notwithstanding the jealousy with which the people of the United States regard the existence of any old-world régime upon what they conceive to be *their* continent. Turning to Asia, we find the most marked changes to have been brought about by Russia in the central and north-eastern regions, by ourselves in India, and recently by France in the Indo-Chinese Peninsula. Russia

the many firms of eminence who have produced useful maps, those of Justus Perthes of Gotha, and of Mr. Stanford and Messrs. Philip & Son of this country, stand pre-eminent for the production of original maps, which have been, and are still, useful aids to explorers.

has gradually absorbed the nomad tribes of Central Asia, and has made herself formidable to this country by a steady and persistent advance towards our Indian frontier. India, which was held by a number of independent princes and rulers of more or less power and importance, and which formed a vast battle-ground of rival faiths and races, has now, through the generally beneficent, though sometimes, perhaps, arbitrary rule of Great Britain, been assured a period of peace and good government. Religious animosities, it is true, still break out from time to time, but they are easily suppressed, whilst slowly but surely superstitious practices are disappearing before the civilising agencies of the West. A hundred years since our possessions in India covered about 150,000 square miles, whilst to-day more than one and a half million of square miles, peopled by nearly three hundred millions of inhabitants, are more or less directly under British rule. France has gradually extended her civilising influence over fourteen millions of people within an area of 170,000 square miles, and is creating a "French India," very much on our lines, in the Indo-Chinese Peninsula.

But the most remarkable phase of Asiatic progress during the century, or perhaps it would be more correct to say during its latter half, has been the development of the Japanese Empire. Limitation of space forbids our dwelling upon the second birth and rapid growth of this "Great Britain of the East." Despite the jealousy and diplomacy of Russia, whose traditions would seem to embrace the conquest of the whole Asiatic continent, Japan is destined, with expanding boundaries, to carry the constitutionalism and civilisation of the Western world into the far East. Her recent victorious encounter with China has not only demonstrated her own resources and the power of Western armaments, but has had the effect of clearing new avenues for the entrance of Europeans into the vast territory of which the inhabitants have sought to hedge themselves against all external innovation.

Australia and New Zealand are entirely products of this

century. At its commencement the shores only of the great island had been visited and slightly colonised, a settlement of the outcasts of this country having been made at Botany Bay, whilst, as in the case of western North America, the great expanse of territory inland was in possession of barbarous tribes. These are now gradually dying out, and the whole continent of British Australasia, with more than three million square miles of territory and a population of four and a half million souls, is a rival in progressive civilisation to the English-speaking races on both sides of the Atlantic.

But perhaps the most interesting phase in the world's progress during the present century is to be found in the colonisation of the "Dark Continent"—Africa. That is so for various reasons. The courage and endurance needed to overcome the difficulties and dangers of climate, and other natural drawbacks to travel; the ignorance, previous to the explorations of Livingstone, Stanley, and a host of other adventurers, of the geography of the interior; and the obstacles thrown in the way of explorers and traders by native rulers and tribes, some of them cannibals and sacrificers of human beings—all these conditions have tended to invest the exploration and colonisation of Africa with romantic interest; and in recent years that interest has been intensified by the efforts of various European States to secure a portion of the coveted, though in many parts inhospitable tropical regions.

This country, which has been undoubtedly the most efficient coloniser, possessed at the beginning of the century about 200,000 square miles, whilst to-day her "sphere of influence" covers nearly $2\frac{1}{2}$ millions of square miles, with an estimated population of nearly 40 millions, of whom about half a million are whites.

France has occupied, including Madagascar, nearly a million square miles, with about 18 millions of inhabitants, few being whites. Germany has acquired nearly a million, Portugal about three-quarters of a million, Italy about half a million, and Spain about a quarter of a million square miles; whilst the "Congo Free State," with an area of 800,000 square

miles and 8 million inhabitants, although not at present a colony of Belgium, owns allegiance to its king, and is likely during the coming century to be brought fully under its sway. The effect of this colonisation of the continent by European nations has been most beneficent so far as the aboriginal races are concerned. Barbarous customs such as human sacrifices are suppressed with a strong hand, and savage rulers who persist in practising them are deposed. Certain forms of domestic serfdom still continue, but the abolition of slave-dealing, along with all its inhumanity, is only a matter of time. And this leads us to say a few words concerning the changes which have been wrought during the century in regard to slavery as an institution.

Our own countrymen have been conspicuous in their exertions to liberate the slave all over the world. It has been said that up to the commencement of the century we went to Africa to purchase slaves, but that ever since we have gone there to stop the traffic. Happily, pecuniary sacrifices on the part of the nation sufficed to secure freedom for our own slaves; the extension of our territory has everywhere been followed by the same result; and, as just stated, our fleet has been constituted an efficient police for the suppression of the slave-trade. Russia, too, despotic as her rule undoubtedly is, emancipated her serfs under trying difficulties, and she has also abolished slavery in the course of her Eastern advances; but as for the United States, her people were unable to free themselves from the curse of their "peculiar institution" except at a cost of blood and treasure unparalleled, perhaps, in the world's history. With the abolition of slavery in the British Empire, in Russia, and in the United States the names of Wilberforce, and of the martyrs, Alexander and Abraham Lincoln, will be honourably associated for all time.

Only in one European country are slavery and the slave traffic still tolerated, namely, in Turkey; but, happily for the cause of civilisation, the Turkey of to-day is but the shadow of the reactionary Power which at one period in the world's history threatened to engulf the whole of civilised Europe.

Already during the past century several small but promising States have sprung up out of the ruins of the moribund empire which presents such an anomaly in the midst of our advancing civilisation. Roumania, Servia, Bosnia, Herzegovina, and Bulgaria have all attained more or less complete liberty from Ottoman rule, with all its accompanying atrocities, and not long will the remaining subjects of the Porte—certainly not its Christian subjects—be content to remain outside of the pale of civilisation. It is fervently to be hoped that the change may be effected without a repetition of the displays of barbarism which preceded the liberation of Bulgaria, and which have unfortunately strangled, for a time at least, the liberties of Armenia.

Besides the agencies to which we have in the foregoing remarks drawn particular attention as some of the chief that have given such a marked impulse to the spread of civilisation during the century, namely, pioneering, colonisation, and the abolition of slavery and slave-trading and of barbarous usages, and to some of which further reference will be made hereafter, there have been, as already stated, many others of greater or less importance, and to these the reader's attention will now be more fully directed.

ESSAY I

THE LAND AND THE CULTIVATOR

As land is not only the great primary source of, and a necessary factor in, all material production, but also an essential of the very existence of living beings, it is impossible to exaggerate the influence which land tenure exercises upon the material and moral condition of the people. The right to live consequently involves the right to be on and to use land, and the denial of that right by any conceivable embodiment of power would be equivalent to extermination. It is obvious, then, that the conditions upon which that right is granted and limited by tyrants in savage climes or lawgivers in civilised countries are of the very first importance to the human race. For that very reason the possession of land and the control of its distribution and use have been the causes of more fighting and the subjects of more laws than any other causes of dispute in the world. Nevertheless, as the very elements of social science are not yet settled upon a firm and authoritative basis, land tenure at this end of the nineteenth century is a hotch-potch of empirical and unsatisfactory expedients, constantly increasing in number; and it will remain for some future, and probably distant, generation, even in the most enlightened country, to bring it into conformity with the true interests of the people as a whole.

There are evils inherent to the ownership of land by individuals, however carefully it is hedged about by the supreme rights of kings or Parliaments, and these evils often preponderate over the advantage, in the form of a stimulus to industry, which the exclusive possession of land affords. So long as the owner is also the occupier, those evils are at their minimum; but as soon as he becomes a landlord, or his land is required for purposes of building, recreation, or any public use, they are felt in various degrees of intensity. The extent to which the health and even the lives of the people, especially dwellers in towns, are sacrificed to the private ownership of land is incalculable. Cramped, insanitary, and expensive dwellings, and the lack of gardens and open spaces, are directly traceable to

this system of land tenure, as well as the less disastrous but still serious evils incidental to farming under insecure conditions.

It is no wonder, then, that many thoughtful men are advocates of the nationalisation or municipalisation of the land. It is not the object of this essay to advocate either of these projects; but it may be frankly admitted that there is much to be said for each of them, and very little against them besides the difficulty of carrying them into effect, especially in areas covered by buildings. That the difficulty is exaggerated so far as agricultural land is concerned may be proved by pointing out that if the latest Irish Land Purchase Act had been made a compulsory measure, affecting all the agricultural land in Ireland, the land, purchased with funds raised or guaranteed by the State, could easily have been retained by the State; the occupiers remaining tenants, with all their existing rights of selling their occupancy, but without the power of subletting or dividing their farms, and subject to periodical revaluations of rent for the land apart from their property in or upon it. In New Zealand and Australia partial and clumsy attempts, in the forms of perpetual leases and similar expedients, have been made to maintain the national ownership of Crown lands; but we have yet to see a comprehensive attempt to carry into effect the principle of nationalisation, with the requisite conditions for safeguarding the public interest on the one hand, and the just claims of the occupiers of land on the other. In this connection it is important to point out that Mr. Henry George's single-tax system is the very antithesis of true land nationalisation, as it would intensify the very evils which that great agrarian revolution is intended to cure. Instead of abolishing "landlordism," his plan of taxing landlords up to the extreme limit of impoverishment, short of the complete confiscation of their property, would convert them into a body of utterly mischievous rent-chargers, with no interest in the land or their tenants beyond that of constantly exacting as much rent as possible in excess of the exactions of the State upon themselves.

While in this country land nationalisers have not yet made sufficient progress to get a voice raised on their behalf in Parliament, the municipalisation of the land has been making a steady, though almost insensible, progress ever since the Legislature first put a check upon the private enclosure of commons, which threatened at one time to deprive populous districts of all their breathing-places, and villages of their recreation and feeding grounds. Although the principle of land municipalisation is rarely if ever mentioned by name in Parliament, it is embodied in most of the sanitary and other social measures of modern times, and in the recent Acts which have transformed our system

of local government. Local authorities may now take land for various public purposes, or to let in small holdings or allotments, with or against the will of existing owners; and the tendency of the times is to extend their powers in this direction.

Leaving "counsels of perfection" in relation to land tenure, which seemed to call for notice in the first instance, in order to clear the ground of survey, the prevailing actual systems may now be considered. Occupying ownership is unquestionably the simplest system, and, from an industrial point of view, it possesses undoubted advantages. Every one has heard its praises sung by enthusiastic advocates, who have repeated the well-worn figurative description of its capability of turning sand into gold, or a desert into a garden. As no other security for improvements is quite equivalent to ownership, this tenure is theoretically the best from an industrial or social point of view; but when judged by results in a country like our own, certain disadvantages inherent to it become apparent.

Occupying ownership may be compared with tenancy from two points of view—(1) its profitableness to the cultivator, and (2) its advantages to the community. From the first point of view circumstances must affect the judgment, and what is true in one country is not necessarily so in another. In a wealthy country like our own, where land is desired for the position or pleasures which its possession affords (leaving out of account the disturbing influence of a period of extreme depression), its cultivation yields a higher interest on capital than its ownership. Therefore, a farmer, under ordinary circumstances, can obtain more profit from a given amount of capital as a tenant than as an occupying owner. Even if he buys a farm and mortgages it up to three-fourths of its value, he can farm only about half as much land as he could rent with the same amount of capital, and his interest and landlord's expenses will amount to more per acre than the rent of the same land would be if he hired it. These facts are so well known that it is not necessary to bring forward example cases to demonstrate them. It is true that any improvements made by the occupying owner are secure, so that by regularly good farming he may steadily raise the fertility and intrinsic value of his land; whereas the tenant risks the loss of a portion of his improvements, as their unexhausted value, or most of it, may be appropriated bodily by his landlord, the Agricultural Holdings Act notwithstanding, if he quits, or by an increase of rent if he stays. It is also true that when land is rising in value the occupying owner gets the "unearned increment," and that this sometimes makes up ultimately for the extra rent he pays, as compared with that of a tenant on equally good land; but, on the other hand, when land falls in

value the former get no relief, as the latter does, in reduction of rent, and his returns may fail to yield sufficient profit to enable him to meet the interest on his mortgage. Again, the improving farming which the occupying owner may safely pursue may prove so advantageous as to give him a better profit per acre than a tenant, who dares not risk so heavy an outlay, obtains; but, in ordinary farming, this seldom makes up for the smaller number of acres farmed and the other disadvantages inherent to ownership in this country.

On the whole, then, and notwithstanding exceptions, which may be said, indeed, to prove the rule, there is no doubt that, in the past, farmers in this country have done better by hiring land than by buying it. This is sufficiently proved by the fact that the yeomen, once so numerous in England, have been steadily diminishing in number for years past, and are now almost extinct in most parts of the country. The present extremely low price of land appears to offer a rare opportunity for men of capital, possessing a knowledge of farming, to purchase farms for occupation, as sooner or later, in all probability, there will be a considerable recovery in the value of land. Even so, however, the advantage would be one of speculation in land and not of farming; and after the recovery had reached its limit, the occupier of the purchased farm would do better by selling it and hiring double the acreage than by retaining it.

The foregoing statements apply only to ordinary farming. Where fruit-farming or market-gardening is in question the case is different. The outlay upon the land in those branches of industry is so extremely heavy, especially where a fruit plantation has to be made, that ownership is greatly to be preferred to tenancy under existing circumstances.

If we had a perfect law of tenant-right in Great Britain, or even as nearly perfect a law as there is for Ireland, it is possible that even fruit-growing and market-gardening would not need to be excepted from the rule as to the superior profitableness of tenancy over ownership to the farmer.

In new countries, where land is extremely cheap, ownership is to be preferred to tenancy for several reasons. In the first place, as the country becomes settled, the land must increase greatly in value. Secondly, the occupier puts up whatever buildings he requires, and makes any improvements that are made. Thus he may easily spend, in the course of a few years, in capital and labour, ten times as much as he paid for the land in the first instance, especially if he has to clear it; and, usually, there is nothing of the nature of tenant-right in such countries where land is let by private owners. These remarks do not apply to the perpetual or pastoral leases, or the various other

kinds of letting by the State in Australia and New Zealand. But there is nothing of the kind in the United States, Canada, or Argentina. Yet in the first and last of these three countries the system of tenancy under private landlords has enormously increased during the last few years, and it is becoming common in some parts of Australia.

In the United States, according to the last census, the owning farmers had decreased during ten years by 24,117 in the New England states, while the tenants increased by 7248; in the south there was an increase of 13,915 in the number of owners, and of 275,785 in that of tenants; in the middle states the farmers who owned their farms diminished to the extent of 24,304, and the tenants became more numerous by 24,075; and in eight north-western states, for which details are not available for 1880, there were 129,322 owners and 108,507 tenants farming land. This increase of tenancy is mainly the result of agricultural depression, and is the cause of deep regret among public men. When times became bad, many of the owners of farms were unable to pay the high interest charged on mortgages, and the mortgagees foreclosed. In the southern states, however, a good deal of the so-called tenancy consists of the letting of land for the season to negroes by an arrangement under which they take only a portion of the produce in lieu of wages. In the west and north-west a good deal of land is let on the sharing system, the landowner taking a portion of the produce instead of rent. This plan of letting is general among the wheat-growers of the Argentine Republic, chiefly Italians, who can thus take a large acreage with very little capital. Some of the great squatters are letting land in the same way in Australia.

If any system deserves the name of "exploitation," it is the one just mentioned. In the Argentine Republic, for instance, as Mr. De Rinzy Brett, who owns an estate of 20,000 acres in that country, explained to the Royal Commission on Agriculture, some of the landowners let land to Italian farmers for three years, with the special object of having it prepared for laying down with lucerne. The owners provide houses, other buildings, seed, working-cattle, and implements, and take half the net returns. In this way they get new land broken up and made fit for lucerne, which they sow at the end of the three years, while the farmers shift to fresh land. This system is a new one, introduced by Mr. Brett; but it is growing, as the great pastoralists find that lucerne pastures are very profitable, and great tracts of land are being laid down. The poor farmers are attracted by the system, because it enables them to take large areas of land for wheat-growing with hardly any

capital, but from every point of view except that of the landowner the system is a bad one. The laborious and penurious farmers, doing nearly all the work with the help of their families, manage to get a living, and sometimes to save a little money, low though the price of wheat is, helped as they are by the virtual bonus on exported wheat afforded by the depreciated paper currency of the country. But they leave the chief fruits of their labour behind them when they shift from one tract of land to another. The more general system is for the farmers to hire land for an indefinite period, paying from 9 to 18 per cent. of the produce as rent, and providing their own buildings, stock, and plant. Without a vestige of tenant-right, their improvements, such as they make, are at the mercy of the landowners. Formerly the colonists purchased the land they cultivated, but of late the owners have refused to sell land at its reduced gold price.

The sharing system of letting land in the western states of America and Argentina, as above described, is a modification of the *métayage* which is common in the south of Europe, but without the patriarchal amenities which alone make that system tolerable. At the best *métayage* is only an apology for a better system of tenure, suited to poor tenants to begin with, but tending to keep them poor, and altogether discouraging to the improvement of the soil.

So far as the produce-sharing system is only a substitute for labour hiring at money wages, there is much to be said for it, especially when it is a stepping-stone to ownership. If a man cannot purchase land, or hire it in an ordinary way, it is better, perhaps, for him to take it on the produce-sharing system than to work for wages. If fortunate, as well as industrious and frugal, he may thus save money more quickly than he could save it out of wages, with a view to the acquisition of land on his own account. Unfortunately, however, the system referred to is a rival rather than a stepping-stone to occupying ownership. In a new country any industrious and capable man may soon acquire land; and it is better for him, in the long-run, to purchase a small farm than to hire a large one on the sharing system, as by the former procedure he will "grow up with the country," enriched alike by the advancing settlement of the land and by his own improvements.

So far as the comparison between what we call a yeomanry in this country and capitalist tenants applies to the cultivators of the soil in the countries of Continental Europe, the conclusion as to the relative advantages of the two systems of tenure must depend a great deal upon the laws affecting the status of tenants. Where, as in Denmark, the legal position of tenants

is much more advantageous than that of the same class in this country, it is probable that they make larger incomes than men with equal capital obtain as occupying owners of smaller farms. But there are not many countries in which there is a large class of capitalist tenant-farmers, such as we have in Great Britain. Where the great majority of the cultivators are peasant proprietors, their position may be said to have been settled beyond all question by Continental authorities as being preferable to that of labourers. Where *métayage* is common, again, the question at issue, as a rule, is one between the relative advantages of that system and peasant-proprietorship. The *métayers*, as a class, have never possessed sufficient capital to enable them to take farms as large as those which they occupy without the assistance of their landlords. So far as available information is to be trusted, the position of *métayers* appears to be superior to that of the peasant-proprietors with whom they may be compared, and very greatly superior to that of labourers in their own countries.

Recent legislative efforts to create a peasant-proprietary in this country have raised afresh the question of the relative advantages of ownership and tenancy in farming. The failure of the Small Holdings Act appears to give a sufficiently clear answer. There is a great demand in many parts of the country for small holdings which can be hired, but very little for their purchase. This result is quite in accordance with the experience of the Small Farm and Labourers' Land Company, and with evidence collected by Assistant Commissioners to the Royal Commission on Labour. Men possessed of a little capital see that they can use it more advantageously to themselves upon a comparatively large portion of land as tenants than upon a much smaller portion as owners.

So far as any general conclusion can be stated, in the face of diverse circumstances, it appears to be that tenancy is the more profitable to a farmer where land is dear, and occupying-ownership where it is cheap, under such conditions as commonly prevail. There are, however, as already stated, exceptions, as when an occupier of land desires to concentrate a large amount of capital on a small area, or in fruit-growing, or in market-gardening, in which case ownership is preferable, even in an old country. Conversely, in a new country, a pastoral farmer may find it more profitable to pay a trifling rent for a great tract of country than to purchase a comparatively small ranch.

With respect to the comparative advantages of ownership and tenancy to the community at large, which has yet to be considered, the question is one of extraordinary complication. The economist of the old school would probably declare that

the best system of land tenure is that which can show the greatest production at the smallest proportionate cost. From this point of view, if all labour spent on the land is to be valued, large tenancies in Great Britain and "bonanza" farms in the western states of America would be regarded as best for the public interest, because, by carrying on operations upon a large scale, and using labour-saving implements and machinery, their managers possess unequalled advantages in economic production. Yet there is evidence to show that, in a period of depression like the present, small farmers and peasant-proprietors, by doing two men's work for one man's pay, or by using the labour of their families for nothing more than board, lodging, and clothing, can manage to live where large farmers fail. They may sacrifice themselves and their families in this way; but if they are willing to live a life of drudgery while producing wealth for their country, keeping land in cultivation which otherwise might be converted into sheep or cattle runs, it must not be hastily concluded that the system under which they work is bad from a public point of view.

Again, although it is true that thousands of peasant-proprietors on the Continent of Europe earn less money than British farm labourers receive, and are housed and fed more poorly, the former would not change places with the latter. They prefer their life of impoverished independence to that of even well-paid wage-earners, and they often save money, which English farm labourers rarely do; while they have not the poorhouse in view as the place in which they will end their lives.

From a national point of view there is another detail of great importance in relation to the question now under consideration. The stamina of a nation cannot be kept up to a high standard unless the population of the towns is constantly recruited by the migration of country-bred people, and for this reason a large rural population needs to be maintained. With this object in view, it may be well worth while to sacrifice economic production to some extent; and the great decrease in the rural population of this country during the last twenty years shows that our prevailing system of farm tenancies and hired labourers is not calculated to retain the flower of the agricultural population in the villages. As the people become better educated, they will not stay where they have no career worthy of the name. It does not follow that we should adopt a general system of peasant-proprietorship; for, as already shown, the agricultural labourers' desire is for small rented holdings, rather than for smaller freeholds of their own. Nor does it follow that the country should be entirely cut up into

small holdings of any description; for it is of the greatest advantage to a small holder that he should have a large farm near at hand upon which he may work for wages occasionally. A thorough mixture of holdings of all sizes may be regarded as best for the rural population.

Although a large rural population is desirable from a national point of view, a congested one is not, and in many Continental countries the peasant-proprietors, like the tenants of some parts of Ireland, form a congested population. One of the great evils of a peasant-proprietary is its tendency to promote an excessive subdivision of the land, and, if for this reason alone, a fair system of tenancy is to be preferred to it. Another of its evils is the fatal facility with which its members are led into the clutches of usurers; but fortunately the rapid extension of agricultural credit banks in most of the countries of Continental Europe has already done much, and will do more, to provide a remedy.

If the ordinary run of human beings were perfect enough for co-operative production, there can be little doubt that co-operative farming would be the best method of cultivation for industrious men with very little capital, and in the public interest also, as it would afford a career for farm labourers without sacrificing that economic production which can only be carried on at its best by farming upon a considerable scale. Unfortunately, no undertaking of this kind has yet stood the test of long experience. Co-operation among individual small holders, however, has made good progress of late in several European countries. Many of the rural banks of Germany, Austria-Hungary, and Italy are also co-operative associations for supplying their members with farm requisites at wholesale prices, and for providing them with labour-saving machines and implements for common use; while several of these associations are beginning to collect and sell produce for their members. Similar work is most extensively done for the peasant-proprietors and other small farmers in France by the agricultural syndicates now spread over the whole of that country. Thus cheap credit and co-operation are doing a great deal to remedy some of the chief evils of peasant-proprietorship.

In comparing the English yeomanry with the tenantry who have replaced them almost entirely, there is probably not much to choose from a public financial point of view; but the disappearance of the former class is reasonably regretted nevertheless. It might be supposed that the yeoman would farm better than the tenant, as everything which he does is done for his own property. But the landlord does a great deal for the tenant which the yeoman has to do for himself, and, as a rule,

the yeoman's farm is not more highly cultivated than the tenant's. The explanation is, that the yeoman's land is commonly burdened with a mortgage and with annuities due to members of his family, and thus he is handicapped as a farmer, finding it hard to meet the payments due from him, and too often going on with a diminishing working capital. Holding a social position somewhat higher than that of a tenant farming an equal acreage, the yeoman is tempted to spend more money in various ways, and to get into debt. It is a pity that the yeomanry could not hold their own, as they were a fine, independent class, at one time described as the backbone of the country. Tenants are less independent, and the moral stamina of the nation has lost something by the approximate extinction of the yeomen.

If a choice must be made between existing systems of land tenure, from a national point of view, occupying ownership, with holdings of all sizes, seems preferable to tenancy, but only because the latter system is nowhere as well protected by law as it might be, and in many countries hardly at all. A tenant under the State, or even under a private landlord, if legally secured against capricious eviction, and possessing the right of disposing of his occupancy and improvements, would have all the advantages of an owner, as far as farming goes, without some of the disadvantages.

Changes in land tenure of any considerable importance are few and far between, except in Ireland and in our Australian colonies, which are constantly trying new experiments. In Great Britain we are accustomed to merely tinkering alterations, such as are exemplified by the Agricultural Holdings Act and the Settled Land Act. It has already been stated that the English yeomanry have been dying out steadily for a long period. When farming prospered they were tempted to sell their land by high offers from neighbouring landowners, and since depression became severe many of the survivors have been forced to sell, because they could no longer meet the heavy burdens upon their small properties. Assistant-Commissioners to the Royal Commission on Agriculture tell us of this misfortune in relation to the "statesmen" of Cumberland and the yeomen of Norfolk alike. In spite of the addition to the area of land thrown upon the hands of owners since agricultural depression became severe, the Agricultural Returns show a diminished acreage of land occupied by owners since 1888, the first year in which the return was complete. In Great Britain in that year 4,910,076 acres were returned as occupied by owners, and 27,774,323 acres by tenants; in 1894 the corresponding figures were 4,643,148 and 27,986,707 acres. The

totals of cultivated area for the two years differ, a decrease of 54,544 acres having taken place, attributable chiefly to the greater accuracy of the later return in excluding waste grazing grounds from the category of cultivated pasture. Although about one-sixth of the cultivated area is in the hands of owners, it is to be borne in mind that this includes all the parks and home farms held by great landowners, as well as land compulsorily in hand, owing to depression. The acreage owned by ordinary farmers is not known. Nor is the number of owning-occupiers given in the later return, the attempt to enumerate them having been relinquished because it was not deemed successful. Some occupiers who held several farms, whether owned or hired, sent in only one return each, while others sent in a separate return for each farm. In this way some occupiers counted double or treble at least. Even allowing for this, the number of occupiers who owned land, as returned in 1888, was very small. For the whole of Great Britain returns were obtained from 73,433 occupiers who owned their farms, 20,811 who owned part and rented the rest of the land they cultivated, and 475,962 occupiers who rented all the land they held. It is obvious from what is stated above that all three numbers are too high, and yet, bearing in mind that the Agricultural Returns are collected from all holdings of over a quarter of an acre except gardens attached to dwellings and detached garden allotments, the proprortion of occupying owners appears small.

One of the results of agricultural depression has been to reduce the number of leases for years, which have proved extremely disadvantageous to tenants during the long period of falling prices. While yearly tenants were obtaining great decreases in rent, holders of unexpired leases got no reductions, except by favour of their landlords. Consequently, as the leases expired, they have been very rarely renewed in England, and not generally in Scotland, where they were formerly much more common.

One of the chief benefits of the Agricultural Holdings Act of 1883 was to make a year's notice to quit necessary where the period was formerly only half a year, unless the landlord and tenant make a special agreement for the shorter period. This has rendered yearly tenancies less insecure than they were. In other respects the Act has had more effect indirectly than directly, inasmuch as it has induced many landlords to enter into agreements providing compensation for their tenants' improvements in order to avoid the operation of the Act. Where farms are difficult to let, some tenants have power to insist on what they regard as fair compensatory agreements, which they have greatly preferred to the uncertainty of arbitration under the Act. As a rule, the results of preferring claims under the

Act have been subjects of derision and warnings to tenants to avoid the measure. Tenants have sent in claims, no doubt, sometimes exorbitant; landlords have retorted by sending in larger counter-claims for dilapidation and miscropping or other breaches of covenant; and the arbitrators have split the difference, leaving each disputant to pay his own costs. This is a fair description of the majority of cases decided under the Act. In only a very few instances has any substantial sum been awarded to a tenant.

Adversity has taught landlords a useful lesson in humility, and consequently we hear much less than we heard formerly of the tyrannical subjection of tenants to damage by game, and of such abominable stipulations as that found in some farm agreements requiring the tenant to attend the Established Church. There are, however, estates on which the tenants, even including large farmers, dare not use their legal rights under the Ground Game Act. With respect to political intimidation, it was scotched to a great extent by the Ballot Act; but whether tenants do not vote with their landlords nearly as generally as ever is uncertain. There must be more independence among the tenants of districts in which it is difficult to let farms, and where, consequently, a landlord is more afraid of losing a tenant than the latter is of being turned out of his holding. This state of affairs, however, does not prevail in all parts of the country, and occasionally an account of a tenant being evicted for taking sides against his landlord in an election appears in the papers.

One of the most important results of the depression is the increase of freedom allowed to tenants in cropping the land and selling its produce. Too often the old restrictive covenants of farm leases or other agreements are maintained, such as those which prescribe a certain course of cropping and prohibit the sale of hay, straw, or roots off the farm; but in many cases, notwithstanding the restrictions, the tenants are allowed to crop and sell as they please, so long as they farm satisfactorily, though they are often required to bring back cake or manure of specified value for every ton of hay, straw, or roots sold. This compromise is doubly objectionable. In the first place, it is morally objectionable to require a man to sign an agreement which he does not intend and is not expected to fulfil; and, secondly, the retention of the restrictive covenants gives the landlord the "whip-hand" over a tenant, in the event of the latter making a claim on quitting for improvements, as damages may be claimed against him for selling produce off the farm in breach of his written agreement, although that agreement has been "winked at" by the landlord as well as

the tenant. In such times as these, when it is difficult to make land pay at all, the folly and hardship of tying a farmer's hands, and preventing him from making the best of his farm, deserve the severest censure; and the restrictions should be abolished in the letter as well as in the spirit. In any amendment of the Agricultural Holdings Act, therefore, all restrictions upon cropping and sale of produce by a tenant should be rendered void at law, the landlord being given a right of appeal to the County Court to restrain a tenant who is committing waste by improper cropping or extravagant sale of produce without return of purchased fertilisers, and to fine or evict him if he proves obdurate.

As a body, the landlords of England and Scotland have lately met their tenants with kindness and consideration in the distress which has overwhelmed them, although in too many cases they were tardy in recognising the necessity for substantial reductions of rent. In the early years of the depression reductions were commonly refused to old tenants, and many were ruined in consequence of the exaction of the old rents, while the successors of these unfortunate men demanded and were granted great reductions. Again, the custom of granting only temporary remissions of rent, instead of permanent reductions, prevailed too generally for some years, and prevails still on some estates. This method of giving relief is objectionable for more reasons than one. It makes a charitable allowance of what should be treated as a commercial concession; it keeps the tenant's assessment for rates and taxes higher than it should be; and, by keeping a high rent always hanging over the farmer, reduced only in specially bad years perhaps, it denies him the energy-fostering hope which a permanent reduction of rent would afford. It may be said that a tenant can quit his farm if he thinks his rent is too high; but those who understand the circumstances know that, as a rule, for a tenant to quit in a period of severe depression means ruin. Therefore he keeps on as long as he can, in spite of feeling that his rent is exorbitant, and in the end the landlord probably loses far more than he would have lost by a timely concession. While a farmer is being steadily ruined his farm is usually deteriorating, and thousands of farms have been brought down to an unlettable condition by the prolonged exaction of a rent too high to allow of the tenant paying his way. Generous consideration is often the height of commercial wisdom, and it is this truth which was too slow in being recognised by landlords or their agents, but which has been brought home to most of them by this time. Speaking generally, however, it is only justice to say that the

landlords of England and Scotland have shown generosity and forbearance in their treatment of their tenants during the last few years.

Whether or not the landlords of Wales have generally behaved as handsomely towards their tenants as their fellows in the other divisions of Great Britain is a question upon which there is a conflict of evidence. That they have not reduced their rents in nearly an equal proportion is certain from the latest Report of the Inland Revenue Commissioners, which shows that the following reductions in the gross annual value of land, as assessed under Schedule A to Income-Tax, have taken place between 1879–80, the year of maximum, and 1893–4:—

England,	£11,533,494,	or	24 per cent.
Wales,	199,625,	„	6 „
Scotland,	1,517,405,	„	20 „
Great Britain,	£13,250,524,	or	22 per cent.

These reductions do not include the capital value of the tax remitted in consequence of distress, which, in 1893–4, amounted to about £820,100 for the United Kingdom. It is curious that, in spite of the reductions in Irish rents made by the Land Act in recent years, the gross assessment of land in Ireland under Schedule A was £9,895,005 in 1893–4, against £9,980,543 in 1879–80, showing a reduction of only £85,538. Allowing for remitted tax, the Commissioners make the total depreciation in the gross annual value of land in the United Kingdom, during the period named above, £14,156,100.

It is hardly necessary to say that the depreciation varies greatly in different counties, although there has been a decline in every county of Great Britain, excepting Carmarthenshire. In some of the principal agricultural counties the depreciation is from 20 to 39 per cent. It is greatest in the corn-growing counties, Essex having an undesirable pre-eminence with a reduction of 39 per cent., Suffolk following with 38 per cent., Wilts with 35, Hunts with 33, Norfolk with 31, and Cambridge with 30.

Even those great depreciations do not fully indicate the decline in the rental of agricultural land, because the percentages are averages for all classes of land not covered by buildings or used as railways; and the value of a good deal of land near towns has risen. The Reports of Assistant Commissioners to the Royal Commission on Agriculture estimate the fall in many counties at 20 to 50 per cent., and in a few up to 100 per cent., the last figure being representative of cases in which farms are now let rent-free, or at rents which do not cover the tithe

formerly paid by the tenants. In Essex and Hants, for example, the reductions are put at 25 to 100 per cent.; in Kent, at 15 to 100 per cent.; in Suffolk, up to 70 per cent.; in Wilts, from 10 to 75 per cent.; and in Hunts, at an average of between 40 and 50 per cent.

Another change brought about by depression is a great increase in the area of pasture. During the last twenty years permanent pasture has increased in Great Britain by nearly 3,288,000 acres, and instead of the acreage being 39 per cent. of the total cultivated area, as it was in 1875, it now stands at 51 per cent. In addition there has been a considerable expansion of temporary pasture, the extent of which cannot be stated exactly, because it is classed with clover and mixtures, which occupy the land exclusively only one year; but if the latter are put at one-sixth of the arable land for both periods, the increase in temporary pasture lying down for two to seven years, or more in some cases, is about 732,000 acres. This makes the area in permanent and temporary pasture in Great Britain over 4,000,000 acres more than it was twenty years ago. By the corresponding contraction of the acreage regularly under the plough, the employment of labour has been greatly reduced.

During the twenty years ending with 1891, the census year, the males employed on the land in England and Wales decreased by 12.2 per cent., and the females (including, no doubt, many female farm servants employed almost exclusively indoors) by 52.5 per cent. The classification of the agricultural division of the census has never been twice alike; but these figures are as exact as careful calculation could make them. The corresponding calculation, which was a work of great difficulty, has not been made for Scotland for the twenty years, but has been made for the ten years ending with 1891, the result being to show decreases of 4.7 per cent. of males and 49.7 per cent. of females.

So far as evidence is available to determine the point, it appears that the male labourers left the rural districts for the towns and the railways rather because they were attracted by the prospect of better wages than because they were driven from their native villages. In other words, the diminished supply of men in the country preceded the diminished demand caused by the increase of pasture, or at least kept pace with it. If they had not made themselves scarce, their wages on farms would have been reduced; whereas farm wages in Great Britain as a whole were at least as high in 1891 as in 1871. During the last two or three years there has been a reduction in many English counties on account of the impoverishment of the farmers; but the reduction would have come much sooner, and would have been greater than it has been, if the migration of

the men had not taken place. With respect to female farm workers, the enormous reduction in their number is due mainly to a growing distaste among them for work on the land. The cheapness of food and other requirements of the labourer's family removed the necessity of working on the land, which the women formerly felt. But it must be borne in mind that comparatively few of the women worked in the fields all the year round, and that many of them worked there only occasionally. There is reason to fear that the farm labourers will have to bear their full share of the sad results of agricultural depression unless a revival of prosperity soon sets in.

The principal recent changes * in the taxation of land have consisted of the grant of certain imperial taxes, now locally collected in relief of local taxation; the imposition of increased death-duties on land; and the total remission of income-tax to all but extensive farmers. Rates per acre on land, in spite of increased expenditure in some directions, such as education and sanitation, have fallen with the assessment of farms and the diminution of pauperism, while tithes have fallen with the prices of corn. But in proportion to the returns of land, the burdens upon it are much heavier than they have been before since the old Poor Law was superseded.

In Ireland, it is hardly necessary to state, the changes in land tenure have been much more important than in Great Britain. The Land Acts of 1870, 1881, and 1887 produced a great and increasing improvement in the status of the tenant, although there are still imperfections which need to be remedied; and the Land Purchase Act of 1891 made the purchase of their holdings easy and cheap to them. If it had not been for the serious fall in prices, a great improvement in the prosperity of the Irish people could not have failed to result from the stimulus given to the improved cultivation of the land by the large measure of security given by law to the rightful property of the tenants. Apparently, judging from banking and other statistics, an improvement has taken place in spite of the fall in agricultural prices, but nothing approaching to what it would have been if agriculture had been in a prosperous condition. Moreover, the full fruits of improved land tenure could not be expected so long as changes were going on, as the constant expectation of improved advantages has kept the farmers in an unsettled state, and made them think that they had more to gain by apparent poverty than by the application of their energies to their own enrichment. Even yet the danger of part of a tenant's im-

* Changes in course of enactment in 1896 are not included, as they have not been passed by both Houses of Parliament at the time of writing.

provements being added to the landlord's share in his holding, and leading to an increase of rent, is not fully removed. The fall in the prices of corn has had the effect in Ireland, as in Great Britain, of reducing the area of arable land and increasing that of pasture. Consequently the demand for labour on the land has been reduced, and the landless labourers, who are less in demand in England than they used to be for harvest and other busy seasons, are greatly to be pitied. Their wages are extremely low, and if it were not for the low prices of food, their condition would be a desperate one. Fortunately they are not a large class.

In the countries of Continental Europe changes in land tenure are few and far between, and when they do occur they are usually of a revolutionary character. In recent years no great changes have been made by law, though in France tenants have lately begun to demand compensation for their unexhausted improvements when they quit their holdings. But agricultural depression, which is felt even in countries in which high Protectionist duties are levied on imports of agricultural produce, has had more or less effect upon the holding of land in some parts of Europe.

France is frequently referred to as if it were a country mainly farmed by peasant-proprietors who hold only a few acres each. It is true that the owners (some of whom are tenants also) are nearly six times as numerous as those who are tenants exclusively; also that the number of small holdings is extremely large, while that of large farms is small; but nearly half the cultivated area consists of farms over 100 acres in extent. The complete Agricultural Statistics of France are published only once in ten years, and do not come out till about five years after the years to which they relate. Consequently the full details for 1882, published in a massive volume in 1887, are the latest available, though some particulars are to be derived from the census of 1891 in relation to the agricultural population. Some mistakes have been made by taking the number of agricultural assessments as identical with that of separate occupiers. For example, as there were 2,167,667 assessed "workings" (*exploitations*) of land of less than a hectare in 1882, it has been stated that there was that number of occupiers of less than a hectare (2.47 acres). An examination of the statistics, however, shows that, whereas there were 5,672,007 separate assessments of agricultural land, there were only 4,187,974 separate occupiers, many having more than one *exploitation*. Still, the number of very small holders in France is extremely large.

Although considerably more than half the assessments of

land in 1882 represented less than 12½ acres each, they comprised only about one-sixth of the agricultural land; while about four-fifths represented less than 25 acres each, embracing only a little over one-fourth of the 122,467,000 acres making the agricultural area; and the small number of 142,088 holdings of over 100 acres each covered 55,000,000 acres, or not far short of one-half of the agricultural area.

The total number of owners of land in 1882 was 4,835,246, of whom 3,525,342 occupied their land (many also hiring land in addition), and 1,309,904 were not occupiers. It is important to observe that no fewer than 727,374 of the occupying owners were labourers. The number of ordinary tenant-farmers was 968,000 in round figures, that of *métayers* being 340,000, and about half of these two classes of tenants owned some of the land they occupied. The landless day-labourers numbered 753,313, besides 1,422,225 male farm servants (*domestiques de ferme*).

During the nine years ending with 1891 the land-owning labourers appear to have increased by over half a million. This indicates a more minute subdivision of land. The larger occupying-owners also have increased in number, while tenants have become fewer, indicating that depression has led to farms being thrown into the hands of the landlords.

Although depression has been felt severely by landlords and tenants in France, in spite of the high duties on agricultural imports, there is no evidence to show that it is as severe as it is in our own country. To say that Protection has not benefited the cultivators of the soil in France, simply because depression has increased in spite of it, is to indulge in Free Trade fanaticism. Protection must have benefited the great landowners and the peasant-proprietors alike, though tenants may not have derived any advantage from duties which have kept rents from falling as low as they would have fallen under Free Trade.

The Legislature in France helps agriculturists in many ways, but taxes them very heavily, while the local authorities follow suit with their oppressive *octrois*, or market dues. In 1893, according to the *Bulletin de Statistique*, these dues amounted to nearly 317,000,000 francs, about one-third being charged on the manufactured products of vineyards, orchards, barley-fields, and hop plantations, and at least another third on the raw products of the farm. As to Imperial taxation, the Land Tax alone was recently estimated by M. Kergall, a prominent agriculturist, at £10,880,000; while M. Turrel, in the Chamber of Representatives, put the total burdens on land at the equivalent of £60,000,000, or nearly ten shillings per acre

on the total cultivated area. This may be an exaggeration; but with a Land Tax exceeding £10,000,000, and *octrois* amounting to about £12,700,000, it is clear that these burdens are extremely heavy.

France has been taken as an example of a country in which a peasant-proprietary is established for the great majority of the agricultural population. In other countries of Western Europe in which the same system of land tenure prevails the excessive subdivision of the land is, as in France, one of the chief evils connected with that system. As already stated, however, this evil and the still worse one of slavery to usurers are being alleviated more or less extensively by co-operative and credit banks. Even in Russia these institutions are making headway, while the Imperial Peasants' Bank has been a remarkable success, and has helped a large number of the peasantry. It is clear, from a Report from Consul-General Michell, written in July 1895, that the peasants are steadily acquiring the property of the nobility. During 1893 alone, individually and in combination, they acquired 424,704 acres by the help of the Peasants' Bank alone. The great landowners are mainly absentees, spending nearly all their time and money in the capital or in foreign travel, and their farming does not pay them. They are getting more and more heavily in debt, and they do not repay loans as the peasants do, although the Imperial Nobility Bank was established to help them on easy terms. In short, while the Peasants' Bank is a great success, the Nobility Bank is a failure. Yet Mr. Michell writes of the "almost universal distress of the peasantry," thus confirming other writers. As in France, the Russian Government helps the cultivators of the soil with one hand, and picks their pockets with the other, taxation being ruinous in proportion to returns from the land in Russia.

In Austria the peasant-proprietors and small leaseholders have been in a bad way for some years past, and some of the best authorities are of opinion that, except near towns, or where the holdings are large enough to allow of cattle-breeding, the peasant farm is destined either to be absorbed in the large estate, or to be subdivided into small plots, which would be held, presumably, by men who work for wages on the large estates, some of which are farmed with a good deal of enterprise. But a great deal has been done lately to encourage co-operative and credit banks. Since the abolition of villeinage in 1848 the subdivision of the land has gone on to an alarming extent, and the best way of checking it has long been a question of careful thought among Austrian statesmen.

In Hungary about half the holdings are under seven acres

each, and three-fourths are under twenty-three acres. As in Austria, the number of very small holdings has multiplied since the emancipation of the peasants in 1848. Production on the large farms, managed by the proprietors or their stewards, is said to be much greater than on the small holdings.

It is impossible within the limits of this essay to give details relating to land tenure and cultivation in all the countries of Europe. Depression has been almost universal for some years past. In Germany the agrarian question has become one to decide the fate of political parties. In Italy, where the taxation of land is probably higher than in any other country, distress has been extreme. No description of land tenure or variation of cultivation has availed to keep back the tide of depression. But in all the countries named the village banks and co-operation have done much to prevent the ruin of the small holders. The Swiss peasants have developed the system of agricultural co-operation to an extent not known in any other country besides Denmark, carrying it into breeding as well as into dairying. They have felt the pinch of low prices severely; but their wonderful industry and skill, aided by co-operation, has enabled them to make a brave fight against adverse circumstances.

Denmark is generally believed to have withstood agricultural depression better than any other European country, though her important dairy industry is now suffering from the keen competition of Australasia and the sale of margarine as butter in England. Mr. Rudolph Schon, Secretary to the Royal Danish Agricultural Society, in a report written for the Foreign Office, in answer to questions put by the Royal Commission on Agriculture, expresses the opinion stated in the first sentence of this paragraph. The chief reason, he thinks, is "the high technical standpoint Danish agriculture occupies, uniting both theory and practice; accounts of investigations being rapidly conveyed to the people, who receive such with great intelligence." This, he adds, has been clearly shown during the last twenty years, during which a change from corn-growing to breeding and dairying has taken place. There is much in this, no doubt; but co-operation in dairying and in marketing the produce is probably even more important as an explanation of commercial success. Again, land tenure in Denmark, on the whole, is probably on a better basis than it is in any other European country. Most of the farms are either freehold or let on a heritable lease. Since 1850, when the emancipation of the peasants was completed by the abolition of manorial exactions, great efforts have been made to increase

the number of peasant-proprietors. Mr. Schon states that there are about 1900 farms of 250 to 300 acres, about 74,000 smaller farms (94 per cent. of which are owned by their occupiers), and 150,000 holdings of 7 to 10 acres. Occupiers of the first class of farms, he adds, have felt the fall in prices most severely, and those of the second class less so, while the small holders have scarcely felt it at all. The great majority of the small holders are peasant-proprietors, and the rest are cottars, paying rent in money or labour. But a lease is compulsory when land is let, and it is almost invariably for two lives, those of the tenant and his wife, with a right to their children to inherit it, unless the owner desires to sell it, which he can only do under fixed conditions, while he must give good reasons for residing upon it himself. He may lease it for fifty years or for life, but cannot let it on a yearly tenancy unless under very exceptional conditions. Even a cottar is assumed by law to hold a lease for two lives, if he has no written lease, after he has been six months in possession. The provisions of the law vary for different classes of holders; but these are the main features. Tenants can only be evicted for fixed reasons, such as non-payment of rent or flagrant deterioration of the land. Outgoing tenants are entitled to compensation for their improvements, as settled by arbitration. The settlement is facilitated by the custom of making an inventory of the condition of a farm on the entry of a tenant, arbitrators being called in for that purpose. Thus tenants in Denmark enjoy great security of tenure and property, and there is every encouragement to them to make the most of their land. Their chief disadvantage in a period of falling prices is a rent fixed for a lease for lives; but in some cases payment is in kind, or graduated in accordance with the prices of produce. Moreover, there are legal restrictions upon the excessive subdivision of land, in spite of the encouragement given to the carving of small holdings out of large estates. Fifty years ago Danish farming was in a very backward condition; but it has vastly improved under fair and enlightened conditions of land tenure and the great attention paid to technical instruction in agriculture and dairying. These circumstances have led, above all things, to economical feeding, very large quantities of the cheaper kind of food being used there, of which old-fashioned farmers in this country have not yet ascertained the value.

Some of the principal changes in land tenure in the United States, Argentina, and Australasia have already been noticed. With the exception of Argentina, the depression in agriculture has encouraged stock-breeding, meat production, and dairying, at the expense of corn-growing, or at least of wheat-growing;

for other grain, and maize especially, has continued to extend over more and more ground in the United States. The most recent development in Argentina, Australia, and the arid regions of the United States is a great increase in the cultivation of lucerne, a crop which defies drought on land at all suited to it, while producing a large quantity of highly nutritious forage. During the last two or three years a great area of land has been laid down with lucerne to form permanent pastures, and the result is to enable great stockowners to avoid the enormous losses to which they were formerly liable in seasons of drought.

The lessons to be learned from the necessarily imperfect survey of the leading points in the land tenure of some of the principal agricultural countries given in the preceding statements appear to the writer very much in accordance with the introductory remarks. With respect to the merits or demerits of the system of peasant-proprietorship, a decision is rendered difficult by the inveterate partisanship of those who are for or against it. In every country it appears to excite a degree of strong feeling which cannot fail to distort the judgment of those entertaining the bias. On one hand we are assured that peasant-proprietors live where occupiers of the land as tenants or as large cultivating proprietors would be ruined; and on the other we have a picture of abject poverty, miserable penury, and a degrading excess of labour placed before us as descriptive of their common lot. Where the abuses to which their tenure is peculiarly liable are unchecked, their lot is truly a miserable one; but it has been more or less improved of late in many countries, and it is capable of vast improvement still. Even in breeding first-rate stock, which is commonly regarded as almost impossible to very small holders of land, the cultivators of the Channel Islands and Switzerland have overcome the difficulty. Moreover, poor as the occupiers of very small holdings usually are, it must not be forgotten that the landless labourers of their respective countries are still worse off as a rule. To compare the lot of a French peasant-proprietor maintaining a family on less than five acres of ordinary land, far from a good market, with an English or Scottish farm labourer is hardly fair. But experience in this country and in Denmark proves that it is an immense advantage to have large farms intermixed with small holdings, so that the occupiers of the latter can add to the returns of their land by working for wages occasionally, or regularly if they have very small pastoral holdings. Where a vast number of peasant-proprietors are massed together, legal restrictions upon subdivision should be imposed.

It has been already urged that a perfect system of tenancy, under the State, or even under private landlords, has all the advantages of ownership for ordinary farming, without the disadvantages of that system. But tenancy without satisfactory tenant-right is indefensible from all points of view. Under a benevolent landlord it may work smoothly enough for the tenants; but there is no security as to the inheritance of benevolence, and what satisfies the tenants, whose tendency is to occupy the largest number of acres at the lowest rent, is not necessarily advantageous to the labourers or to the nation at large. It is customary in this country to exclaim against dual property in land; but where the capital of two persons is mixed in the same farm there must be dual property, and the only question is whether that of the tenant should be secured to him by law or not. Although the farming of some parts of Great Britain is the best in the world, taking large tracts of country into account, it is so in spite of, and not because of, the disadvantages of our shamefully imperfect tenancy system. Moreover, the excellence has been attained at the cost of the ruin of thousands of good farmers, and of the robbery of hundreds of thousands. Landlords and the country too have been losers by the hand-to-mouth system of farming encouraged by tenancy under insecure conditions.

As there is no prospect in this country of establishing a system of occupying-ownership as the prevailing system of land tenure, the importance of a thoroughly good tenant-right law is all the greater. But the difficulties in the way of it are considerable. The valuation system, upon which the Agricultural Holdings Act is based, has broken down, and there is no reason to believe that it will ever be made a success. To value improvements in proportion to the increase in the letting value of the farm, eliminating any change in value due to other causes, is fair enough in principle, but almost impossible in practice. Consequently valuers insist on assessing improvements upon the basis of outlay during a varying number of years preceding the expiration of the tenancy, according to their supposed durability. But this plan does not sufficiently compensate a good farmer for his continuous expenditure of capital on manures, feeding-stuffs, and labour in keeping the land free from weeds and thoroughly cultivated. Nor does it allow anything for the vast benefit resulting from growing forage crops extensively and feeding them on the land, as contrasted with the growth of corn sold off. Taking the cases of two farmers who have spent the same amount of money on fertilisers and feeding-stuffs during the last few years of their tenancies, it may easily happen that the value of the improve-

ments made by one is double that of those made by the other; yet, under the existing system of valuation, if the latter has not rendered himself liable to a counter-claim for deterioration, both will get the same amount of compensation.

In one case, in Scotland, a tenant was awarded a considerable sum for what was styled the "cumulative fertility" produced by a long period of extremely good farming; but there was a great outcry, and probably the award was illegal under the Agricultural Holdings Act. Although confirmed on appeal in a Scotch court, it has never been repeated; and although Scotch farmers are agitating for such an amendment to the Act as will allow accumulated fertility to be valued, they are not likely to succeed, because of the extreme difficulty of valuing an unknown quantity.

In consequence of the unsatisfactory results of the valuation system, many English tenants are now asking for free sale and valued rents, with sufficient durability of tenure to make those arrangements work. The unhappy relations of landlord and tenant in Ireland, however, have created a strong prejudice against the adoption of an Irish system of land tenure, although the real origin of the unfortunate state of affairs was the lack of that system, which worked well in Ulster for generations before it was extended to the rest of Ireland. It is a fact worth mentioning that the system has been practically adopted by voluntary arrangement between some of the market-gardeners and landlords in Worcestershire, and found to act remarkably well.

Under this system the tenant can make what improvements he pleases, taking his chance of being repaid their unexhausted value in the open market, provided that he does not sell them to a man obviously unsatisfactory as his successor in his tenancy. Thus the compensation is for results, not for outlay. This is the only just principle of compensation. Besides, it gets rid of the great difficulty of allowing a tenant to spend any amount of money in improvements, for which his landlord would be liable to pay, under an Act allowing free scope for developing the resources of the land, supposing that the valuation system is maintained. While it is not desirable to check improvement, the hardship of compelling a landlord to find an unlimited sum of money for improvements carried out against his will is undeniable; and the only way out of the dilemma is that of free sale.

During the long period of agricultural depression, the question of compensation for farm improvements has sunk into comparative obscurity, because retrenchment rather than outlay has been the prominent feature of farming. But if by a rise in

prices, or a considerable reduction of the burdens on land, with other legislation for removing impediments to agricultural success, farming becomes once more a fairly remunerative business, a fair and effective Tenant-Right Law will be of the utmost importance, not only to farmers, but also to their workmen and to all classes of the nation, who alike, though in various degrees, are interested in the most perfect development of the resources of the soil.

ESSAY II

THE FOOD OF THE PEOPLE

THE question of the food of the people in its relation to civilisation presents the serious difficulty that it may be considered from various standpoints—first, the character of the food used, and the mode of its preparation; secondly, its production as an industry; and again, the sources of its supply, and the facility with which it is procurable by the masses. From the savage, who frequently eats his food raw, to the *bon vivant*, with whom cookery is a fine art, is a long stride; but it can hardly be said that the latter in any way represents the most advanced stage of progress; on the contrary, too much devotion to the palate may constitute one of many indications of a decaying civilisation. The food industries of different nations have a more direct bearing upon their moral and material condition. In some of the western states of America, in India, the Danubian states, and wherever the growth of cereals constitutes the wealth of the nation, that industry is naturally the means of supplying the resources of civilisation. But in great manufacturing centres, where the trader and the working man cannot depend upon their own districts for their food-supply, it is essential to their advancement that the care of providing their daily nourishment should be lightened as much as possible by cheap and abundant food from a distance, and every facility afforded for its preparation.

Looking at these various aspects of the question, the best mode of treating it would therefore be to select what may be called a typical nation, where the greatest concentration is to be found of the food products of the world, and where the need for a large, wholesome, and cheap supply is indispensable to its advance in civilisation. Fortunately for us, such a country is our own; and what we propose, therefore, is to consider our food-supply as an industry, or series of industries, in its relation to the other food-producing countries of the world, and incidentally in its bearing upon the moral and material prosperity of the people. Beyond this it is impossible to travel, looking at the limited space afforded by an essay.

In an old country like England, where agriculture was many hundred years ago the national industry, and has continued to be an important one up to the present time, the price of land has considerably increased in value, partly from the demand for it for agricultural purposes, and partly because town dwellers require more or less of it for building sites and allotments. As long as agriculture was protected by import duties sufficiently high to secure satisfactory prices for home produce, it followed that the price of land would be kept at a high level, and, as compared with fluctuating manufacturing industries, would prove to be a safe and attractive home investment. With the opening up of foreign markets and free trade, the price of agricultural produce has been so lowered that farmers standing at a high rental cannot live in the competition, and, as a consequence, agricultural distress is generally prevalent, and the value of land has alarmingly decreased. These difficulties have given more encouragement to the foreign producer, who in many cases is farming a virgin soil, or land not exhausted by long tillage, and as his expenses of production are small, he can obtain a profit at prices which mean ruin to the British producer.

We have now arrived at a period in the nation's history when, with our largely increased population, the land cannot supply our needs, and at the same time we have been educated to demand a scale of dietary which can only be obtained by placing other countries and climes under contribution. With the progress made by almost all nations in civilisation, and the necessities now imposed on persons engaged in commerce to seek for custom in other countries than their own, the production of other climes is known and becomes appreciated, whilst the railway and steamship permit perishable goods to be carried from one part of the world to another for consumption in a sound condition. The medical man is not satisfied with old-fashioned dietaries, and he assists the traveller and foreign producer in extending and enlarging our choice of food by recommending to his patients food not of home growth whose nutritive value and wholesomeness he has satisfied himself are satisfactory for his purpose.

The facilities for travel now at the disposal of everybody with means have done much to break down national prejudices in the way of living and food, and now we expect to obtain at our own homes the food we could once only procure in certain localities and at considerable cost to ourselves. Methods based on correct scientific principles have been devised for the preservation of meat, fruit, and agricultural produce, and either by the direct use of ice, by suitable machinery for producing intense cold, by sterilising meat and liquids by the aid of heat or by

the addition of preservatives, has this preservation been secured. We are thus able to have fish and flesh, either frozen or tinned, from the remotest parts of America (North and South), and from California, Australia, and New Zealand fruit, such as pears, nearly all the year round; for as soon as lands in the same latitude as ours fail in their supplies, we can then draw on the production of southern climes for our dainties for the remainder of the year.

We have also another illustration of our indebtedness to science for the preservation of our food-supply, and for the improvement of prices, in the fact that at almost all our large markets we have places set apart for the cold storage of surplus supplies, or for the preservation of food during hot weather. It is well known to producers how violent and fitful are the changes in prices from day to day; and when perishable goods have to be sold in an overstocked market, the combination by purchasers tends to reduce values still more, and the prices realised under such conditions are merely nominal. Fortunately in large towns the refrigerating chamber is a partial remedy at least, and those who are willing to pay for the storage can, within reasonable limits, choose their own time for the sale of their goods, and obtain far better prices for their produce than otherwise would be the case. There is, however, more or less speculation in this as in other trades, and sometimes goods are kept too long for the expected rise in the market, and are rendered unfit for consumption. At the present time we have an illustration to hand in the supply of Australian rabbits. For a long period rabbits in the Australian colonies have been classed as the most objectionable of vermin, but by means of the cold chambers provided in the ships doing our carrying trade they can be brought here in good condition. They have been shipped in very large quantities, but on account of the comparative cheapness of our own supply, coupled with the prejudice against rabbits brought such a distance, tens of thousands are at the present time in London refrigerating chambers, and will not probably fetch the cost of the rent. The same remarks apply to colonial mutton and foreign beef. The price of fat cattle is at the present time very low indeed, and on account of large shipments of refrigerated mutton and beef having been made during the time of a falling market, the supplies are far in excess of the demand, and are being stored in anticipation of better times.

The establishment in almost every civilised country of a bureau for compiling statistics of its population, agriculture, and manufactures has done much to make all the world akin, and has enabled the statistician to calculate with a fair degree

of certainty the quantity of food annually required and the sources from which that supply must come. The speculator unfortunately tries to make money by forestalling the regular course of trade, and by dealing in options and futures in produce as he does with stock on the Exchange; prices are no longer controlled by ordinary demand and supply, but are at the mercy of the speculative capitalist who has got control of the market. A large business is transacted in wheat and beet sugar, for example, for delivery during any month in the year. By this method of speculation large fortunes are lost and won, and were it only confined to the principals in the transaction it would matter little to the community at large. But all producers and dealers are not speculators, and the effect of these transactions has been to disarrange prices, and in the main to bring them below their proper level. This applies to nearly every commodity.

On the Chicago Produce Exchange speculation in animal food and cereals is far more animated than on the Stock Exchange, and the excitement of the scene is beyond description. The quantity handled and dealt in is remarkable, and the following figures, taken from the official handbook for 1894, will show the volume of the business transacted and the extent of a trade in one city which has been built up within a comparatively recent period :—

In 1864–5.	No. of cattle packed,	92,459	Hogs		760,514
„ 1893–4.	„ „	2,181,366	„		4,219,567
„ 1894.	Dressed beef shipped				1,080,053,993 lbs.
1894.	Wheat received	25,665,902 bushels.	Shipped,		18,213,443 bushels.
„	Maize „	64,951,815 „	„		54,528,482 „
„	Oats „	63,144,885 „	„		50,376,089 „

At the end of the year grain stored in elevators was 30,704,048 bushels.

The modern methods of dealing in produce have in the aggregate a tendency to diminish prices, and whilst thus conferring benefits on the masses, there is no doubt that different industries are locally crippled or destroyed. This is the fate of agriculture in Great Britain to-day; but, as will be seen when treating of our wheat-supply, these modern methods have been carried on in times of Protection in this country, and it was only the necessities of the masses which led to a modification of our oppressive Corn Laws and gave consumers relief.

In passing from generalities to the particulars of our food-supply, it will be apparent from the statistics given that great changes are constantly taking place in the sources of our supply and its character, but it will also be evident that the great guiding principle running throughout all is variety without

deterioration of quality, and lowness of price. The truth or accuracy of this general principle may be contested by some who are wedded to old things and old ways, but when it is remembered that the medical man of to-day is a scientist of no mean order, who has to do with the dietary of the community, and that the death-rate is steadily diminishing and the average duration of human life sensibly increasing, we may be satisfied that our present mode of living is an improvement on the past, and that, whatever may be advanced by prejudiced observers in favour of former practices, the facts adduced by the Registrar-General prove to demonstration that in this country at least we have gained by experience, and live more in accordance with the laws of health than our ancestors.

Flesh-meat, which, next to bread, is the most important article of our national food, naturally commands special attention, and the changes which have taken place in its source of supply will furnish an interesting object-lesson as to our dependence on foreign countries for our food. Before the year 1842 live cattle and fresh provisions were not allowed to be imported, but after that date importation was permitted on payment of a fixed duty. This importation, which was strongly opposed by the British stock-breeders, was proved not to interfere with the price of home-fed cattle, and though an anticipated fall was the ground of the opposition against the measure, four years of experience proved to all that the price of home and foreign cattle was so nearly alike that there could be no danger from competition. In 1846 foreign cattle were allowed to be imported free of duty, and this regulation has since prevailed. Modifications have, however, taken place in our import regulations, for the purpose of prohibiting the importation of cattle infected with any contagious disease, and also for the humane intention of protecting cattle at sea from the cruelties of mankind resulting either from carelessness or avarice. The cattle-boats and their regulations have been carefully inquired into, and though cattle always deteriorate during a sea voyage, yet it has been proved that on many boats the cattle had no protection against storms and the incidents of a sea voyage, and were consequently the victims of untold cruelty.

These defects have to a large extent been remedied, but even at the present time the foreign cattle trade is beset with inhumanity, and not what we should expect from our boasted high civilisation.

When the importation of cattle first began they were brought over in the live state. Cargoes of cattle and sheep have been brought from very great distances with a certain

degree of success, and as the butchers will pay a little more per head for cattle when alive than dead, this small difference in price is sufficient to ensure the importation of live cattle. Later on live importations were rivalled by the cooked meat, in hermetically sealed tins, which came from America and Australia. The complaint raised against this meat was that it was overcooked and stringy, but its portability and fitness for use at any time were great factors in its favour, and it still holds a high place in the dietary of soldiers and sailors on foreign expeditions.

The preservation of this meat was due to the adaptation of an old discovery of the chemical expert Appert, who found that when perishable articles, such as meat and milk, were heated to a certain temperature, and sealed up without access of air, they might be kept for an indefinite time without decomposition. The reason he did not know, and it was left to other observers to prove that decomposition was due to the presence of living organisms, and that at a certain temperature, which was exceeded in the preservation of the meat, they were destroyed.

It was known also that cold was a preservative, and that frozen flesh would not decompose. To utilise this knowledge on a commercial basis was difficult of execution, but eventually the refrigerating chamber, kept at a higher temperature than the freezing-point of water, was brought into use as being as good a preservative as ice, and was not accompanied by the deterioration of flavour possessed by meat which had been frozen.

There have consequently been many changes in the methods of bringing fresh meat to market from great distances, and as a result of these changes prices have been lowered, meat has become a more general article of diet amongst the working classes, cooking has been improved on account of the demand for it, and meat in some form or other can now be procured by those living in remote places, or who may be on long journeys for health, commerce, or duty.

The following statistics may be of service in illustrating the quantity of meat imported and the changed conditions under which it is brought for the use of the consumer :—

	1867.		1894.	
	Number.	Value.	Number.	Value.
Oxen, bulls, cows, calves	177,918	£3,051,310	475,440	£8,285,044
Sheep and lambs . .	540,326	945,661	484,597	804,823
	Cwts.		Cwts.	
Bacon and hams . .	537,114	1,391,779	4,819,388	10,855,715
Beef	246,767	623,392	2,346,415	4,556,502
Pork	150,285	351,871	405,402	772,102
Meat unenumerated, salted or fresh *	...	...	2,484,823	4,751,951
Preserved other than salted . . .	...	...	554,366	1,490,902

The difficulty of obtaining statistics of a reliable nature respecting the price of home-grown meat is almost insuperable, and the prices given in any table, even in official documents, are only approximate. This difficulty arises from the general practice of selling cattle "on the hoof," as it is termed, and not as dead meat, and though the weigh-bridge is now common in our markets, sufficient experiments have not been made of the weight of cattle alive and when dressed for market to establish reliable data for converting one into terms of the other. The Metropolitan Cattle Market supplies us with facts for the metropolitan area, and even in this case the prices of prime and coarse meat are so variable that an average price is out of the question.

The comparison of prices for different years is serviceable as showing the tendency of values, and the following table will be useful for this purpose :—

Prices per stone of 8 lbs. of Cattle and Sheep sold in the Metropolitan Cattle Market.

Year.	Cattle.				Sheep.			
	s.	d.		s.	d.	s.	d.		s.	d.
1869 . . .	3	6	to	5	7	3	6	to	5	10
1874 . . .	4	5	„	6	2	4	10	„	5	11
1879 . . .	4	1	„	5	6	4	6	„	6	7
1884 . . .	4	0	„	5	9	4	11	„	6	5
1889 . . .	2	4	„	4	10	3	6	„	6	4
1894 . . .	2	5	„	4	6	3	7	„	5	10

This table indicates that in the price of beef there has been during the time named a fall of about a shilling a stone, and that the price of mutton is about the same as in 1869.

The price of imported meat can be stated with greater

* Of this quantity, the weight of fresh mutton retained for home consumption was 2,293,022 cwts. This mutton was first imported in 1882.

exactness, and the particulars given for comparison in the following table will be interesting:—

Prices per stone of 8 lbs. of Beef and Mutton imported.

Period.	Fresh Beef. s. d.	Fresh Mutton. s. d.
1866–70	4 1	...
1871–75	3 7	...
1876–80	3 9¾	...
1881–85	3 10½	4 2
1886–90	3 2	2 11¼
1893	3 0¼	2 9½
1894	2 10¼	2 8½

The fall in prices has during the period been more marked than in the case of home-grown meat, but this is not to be wondered at when it is remembered that the industry is new, and the regulation of supplies difficult from such distant centres of production.

An interesting table has been compiled in the Agricultural Returns for the year 1894 showing the weights of certain animal and vegetable produce imported in the years 1873, 1883, and 1893, to illustrate the relative bulks and growths of this produce. It is as follows:—

Imports.	1873.	1883.	1893.
	Tons.	Tons.	Tons.
Animal produce—			
Live animals representing	77,000	166,000	119,900
Dead meat	193,900	302,500	465,300
Butter	64,000	116,700	116,400
Margarine			65,000
Cheese	67,800	90,000	103,900
Vegetable produce—			
Wheat and flour	2,581,000	4,253,700	4,690,300
Barley	462,000	823,000	1,142,200
Oats	595,400	756,900	697,700
Maize	941,200	1,587,000	1,645,200
Potatoes	375,300	257,500	141,400

There are several points of interest in the table which do not appear as striking as they really are from the aggregate figures given. Thus the dead meat imported has increased from 13½ lbs. per head of the population in 1873 to 27 lbs. per head in 1893, and this increase arises almost solely in the fresh beef and mutton. Bacon and hams have in the period only increased 2 lbs. per head, but fresh meat has risen from 3 ozs. per head in 1873 to 11½ lbs. in 1893. The importation of barley has largely increased, but the importation of wheat per

head between 1883 and 1893 has actually declined, whilst flour has increased 16 per cent., and between 1873 and 1883, 130 per cent., per head of the population.

This large increase in the quantity of animal and vegetable produce imported into the country does not end the catalogue of the variety of food we draw from foreign sources, or its quantity.

The value of the poultry and game imported in 1894 was £605,166; the number of eggs was 12,722,292 great hundreds, of the value of £4,003,440; fruit, 15,277,260 bushels, of the declared value of £4,865,825; and raw vegetables of a miscellaneous character, which could not be enumerated, of the value of £1,277,058.

The quantities per head of the population will be given later on, when other importations have been treated on their merits. It is, however, worthy of remark once more that the changes in our food dietary have brought more comfort and choice to our working population, and as a chief result of this variety the health of the population has been better, the average duration of life has increased, and it has been spent in happier and more pleasant surroundings.

Before these changes occurred the agricultural population could very seldom buy meat, and lived chiefly on bacon, cheese, and garden produce; the cheese very frequently forming part of their wages when the employer had any which was defective in quality or not suited to the factor's requirements.

With regard to fruit and vegetables, the importation of foreign varieties has created a market for our home products, and induced growers to cater for the home markets. The tomato would never have been grown as extensively in this country as it is if foreign competition had not forced the home producer to plant it, and as a matter of course the home-grown tomato fetches more money than its foreign competitor, which is liable to damage by time and transit.

Dessert fruits, too, have been brought down in price by the importation of foreign fruit, and so have got more evenly distributed; and, as before stated, the refrigerating chamber permits us to have Tasmanian and Australian apples, pears, and other fruit in the early spring; in fact, our own seasons are thus disregarded, and we have the seasons' fruits for the whole year instead of for a short period if dependent only upon home supplies.

From the fact that wheaten bread has from remote periods entered largely into the nation's dietary, and also that the growing of wheat has been the staple agricultural industry, it is of interest, in studying the food question, to trace the laws which have been in force to regulate the supply and prices of wheat, and which laws seem to be well-defined advance posts

occupied by the nation in their war against Protection. The struggle waged for many years; victory was, however, finally assured, and the repeal of the Corn Laws in 1846 secured liberty to producers, distributers, and consumers to obtain their supplies in the cheapest market for the time being. At this time, when nearing the jubilee of the repeal of the Corn Laws, we are apt to forget all the difficulties which had to be surmounted by those pioneers of Corn Law repeal who had to contend with class prejudices, national jealousies, and the general apathy of those who would benefit by the proposed changes. The economic aspect of the question was also frequently misunderstood, and often laws which were intended to secure one object were in practice found to work on another and unlooked-for direction. It would be impossible in the space allotted for this essay to review the changes which have taken place in Corn Law reform, and we must confine ourselves to recent legislation.

In the year 1828 the duty imposed on imported corn was 23s. 8d. when the price was 64s. the imperial quarter; 16s. 8d. when it was 69s., and 1s. when the price was 73s. or upwards.

During the next cycle of ten years wheat was very low for the first half of the period, and high for the second half. The high price of corn, commercial depression, and other causes of a like kind seemed to turn the attention of thoughtful men to the impropriety of taxing the daily food of the people, and during this period the Anti-Corn-Law League became a permanent institution till it had succeeded in abolishing the duty on corn.

In 1845 the tariff was revised by Sir R. Peel. It was the failure of the potato crop in that year which brought into prominence the incidence of the duties on corn, these duties being considerable, as the following table relating to wheat will show:—

Whenever the legal average price of wheat be—

Under 48s., the duty shall be	10s.
48s. and under 49s.	9s.
49s. „ 50s.	8s.
50s. „ 51s.	7s.
51s. „ 52s.	6s.
52s. „ 53s.	5s.
53s. and upwards	4s.

The duties ceased entirely on February 1, 1849, except a registration fee of one shilling a quarter, specially retained for the official record of the quantity of grain imported for domestic consumption. This fee has been remitted, so that corn is now imported quite free of duty.

The tendency of the agricultural population to flock into towns to earn their living, especially in certain districts, has

made agricultural labour scarce and fitful; and that fact, coupled with the increased competition caused by the repeal of the Corn Laws, has turned the farmer's attention to the use of labour-saving appliances. In America the dearth of agricultural hands has made such machinery and appliances a necessity, and the manufacturers of agricultural implements in the United States justly occupy a foremost position. Steam-ploughs, cultivators, thrashing-machines, harvesting appliances, and other necessary apparatus of farm, dairy, and domestic work have been invented and applied to their respective uses, saving the labour of horses and men, and giving greater security for the completion of farm-work, without risk of strikes and other labour troubles, at special seasons of pressure.

The practicability of steam cultivation of land has been long foreseen, and patents for this purpose have been taken out in abundance since the time of Ramsey and Wildgosse, who in 1618 patented an invention for engines and machinery to plough the ground without the aid of oxen or horses. Moore, Pratt, Heathcout, MacRae, Hannam, and Osborn followed with patents covering the same ground, but none of the machines possessed such advantages as to make them a success. In 1854 Fowler exhibited a patent steam-draining apparatus at the meeting of the Royal Agricultural Society at Lincoln; and Smith of Woolston, having seen that the machine could be adapted to other farming operations, got the maker of it to adapt it accordingly. Howard of Bedford has patented what is popularly called the roundabout system, as distinguished from the direct system of Fowler's. Each system has its advocates, but the cost of the engines and appliances in either system is high, and cannot be easily paid for by the ordinary farmer. This large cost has caused persons to buy and hire them out at so much per day, and many farmers have bought them and other farming implements on the hire system, to the benefit of the maker, but to the detriment of the purchaser.

The terrible agricultural depression has crippled farmers to the extent that much land which can only be worked at considerable expense has gone out of cultivation, and even pasture land, except near towns, can scarcely be farmed at a profit. The present Government are carrying measures to relieve land from some of its burdens, but it is thought by many that the disease is too serious to be cured by the remedies proposed to be applied.

At the present time wheat is being grown in the Argentine Republic at a price far below what it can be produced for in this country; and as the capabilities of that Republic are very great, it is probable that the imports will continue to increase,

as they have done during the last few years. In 1889 the quantity of wheat imported was 37,792 cwts.; in 1893, 7,845,587 cwts.; and in 1895, 11,400,360 cwts. These facts show that there is little hope of reviving wheat-growing in this country; and though in 1894 the acreage under wheat was 30,000 acres more than in 1893, yet the latter year showed a falling off of 322,000 acres from the year 1892. In such circumstances the increase is no doubt due to special conditions of seed-time, and other exceptional causes arising from the abnormal season of 1893, and not from the farmer's faith in the profitable growing of wheat.

During the last year there has been a demand for home-grown wheat, on account of its special quality for grinding purposes when suitably mixed with wheat of foreign growths. The difference in price, however, is small, and not sufficient to tempt the agriculturist to look to his wheat-crop for a profit. The outlook for the home producer is gloomy enough, and as the area of wheat production extends over wide belts of country in the northern and southern hemispheres, the danger of harvest disaster is reduced to a minimum, it not being probable that bad seasons would prevail over the wide region devoted to wheat-growing. The consumer, on the other hand, is almost assured of no abnormal increase in price taking place in the necessaries of life, and the wide fluctuations which took place when dependent entirely upon our home supply will not again occur, through our intimate relations with the corn-growers of the world.

This fluctuation in price will be evident from the following table, which shows the average price of British wheat for the last hundred years:—

Year.	Price per Quarter.					
	Lowest.			Highest.		
	£	s.	d.	£	s.	d.
1775 to 1784 . . .	1	14	8	2	14	3
1785 „ 1794 . . .	2	0	0	2	14	9
1795 „ 1804 . . .	2	11	10	5	19	6
1805 „ 1814 . . .	3	14	4	6	6	6
1815 „ 1824 . . .	2	4	7	4	16	11
1825 „ 1834 . . .	2	6	2	3	8	6
1835 „ 1844 . . .	1	19	4	3	10	8
1845 „ 1854 . . .	1	18	6	3	12	5
1855 „ 1864 . . .	2	0	2	3	14	$8\frac{3}{4}$
1865 „ 1874 . . .	2	1	10	3	4	5
1875 „ 1884 . . .	1	15	8	2	16	9
1885 „ 1894 . . .	1	2	10	1	17	0

Table showing the Quantity of Wheat Grown in the United Kingdom in the year 1893, *and the Quantity of Wheat and Flour Imported, the latter being converted into terms of Wheat for comparison:—*

Year.	Wheat Grown.	Imports of Wheat and Flour.		
		Wheat.	Flour in Terms of Wheat.	Total.
1893 . . .	Bushels. 46,429,407	Bushels. 122,195,710	Bushels. 52,910,065	Bushels. 175,105,776
Proportion in 100 bushels.	Home-Grown. 21.0	...	...	Imported. 79.0

Wheat as such does not, however, enter into the dietary of the nation, but must be ground into flour, and then made up into the different forms of food in general use. Bread, which is the usual form in which flour is prepared for consumption, has in olden times been zealously guarded and controlled by legal enactments, some of which now appear childish and others distinctly tyrannical.

The discoverers of the art of bread-making are not known, but it is alleged that the Romans learnt it from the Greeks, and they in their turn diffused this knowledge throughout the empire. The use of yeast for raising bread is supposed to have been first practised by the people of Central Europe, who did not depend upon old dough for the ferment, as was generally practised. Prejudice by the medical faculty against yeast caused the French to abandon its use, and though admitted that yeast-raised bread was in the main superior to any other, it did not come into general use in France till the end of the seventeenth century.

The particular farina used for bread-making is dependent upon public taste and the nature of the soil and climate. The superiority of wheaten bread has been long admitted, and wherever wheat-flour can be obtained at a reasonable price it is used. The growth of wheat in Great Britain made rapid progress during the eighteenth century, but in the reign of Henry VIII. the wealthy could only obtain a full supply of wheaten bread, their dependants and the poor being compelled to consume rye, barley, and oats. In the reign of Charles I. barley-bread was the ordinary food of the people, and even in 1760 it was estimated that, of the 6,000,000 then in England and Wales, 3,750,000 used wheaten-bread, 739,000 barley,

888,000 rye, and 623,000 oats. In the north of England wheat was scarcely grown at all, and it is on record that when a small field was sown with wheat in 1727 the crop excited curiosity, and the field was visited by many interested in wheat-growing.

The regulations for bread-making and its sale were both numerous and onerous. Under the Assize Act bakers were only allowed to make three kinds of bread, viz., wheaten, standard wheaten, and household. The loaves were made up into peck, half-peck, and quartern loaves, weighing respectively, when baked, 17 lbs. 6 ozs., 8 lbs. 11 ozs., and 4 lbs. 5½ ozs. The price was also fixed by law, and it was only in 1815 that this assize was abolished in its application to London. The statute is still in existence, but with the march of progress competition largely regulates prices, and bakers are permitted to make their bread in their own way, so long as they do not use any deleterious ingredient, and are not restricted to the description of bread they can make.

The large importations of foreign corn have given an impetus to the importation of flour ready for the baker's use. It was seen that a large proportion of wheat could never be converted into flour, and for the purpose of saving freight, the wheat is largely prepared into flour at or near the place of production. This practice has had the effect of closing most of the small flour-mills in this country, and many streams which formerly could boast of providing the motive-power for numerous mills are now deserted. Again, the small miller had not the machinery for doing the best work, and could not, therefore, make headway against the capitalist, who has at command the means of providing the best modern machinery for grinding corn. The grinding trade is now in comparatively few hands, but the work is well done, and the proper admixture of wheat for producing the flour needed has become an art, the peculiarities of each description of flour being well known.

By the use of superior grinding and dressing machines more flour is got from the wheat than was formerly the case, and the quality has been improved by the treatment. In addition to this, the handling of wheat in large bulk by grinders has enabled them to know the good qualities and defects of the different descriptions of wheat brought to market. From practical experience they know what blends produce flour best suited to the wants of the consumer, and they blend accordingly. Flour such as the Hungarian commands a price which places it in an enviable position by comparison, and its body and richness in gluten make it suitable for the best uses of the confectioner and fancy baker.

It is generally imported as flour, and last year the Austrian territories supplied 1,305,760 cwts.

The changes which have taken place in the origin and supply of milk, butter, and cheese to our large towns, and even in some cases to country districts, demand special consideration. Milk, which is a necessary of life, a perfect food, and on which our infant population are so dependent, was at one time produced even in our large towns for local consumption. Under the best circumstances of sanitation, housing, and feeding, cows so kept could not be considered to exist under normal conditions, and when cattle epidemics broke out it could not be otherwise than that cows artificially fed should suffer largely from such diseases.

The consequence has been that milk producers have removed their dairies into the country, and other producers living in places somewhat remote from towns have noted the fact and entered into competition. Through being able by refrigerating their milk and by rapid railway transit to deliver quickly, they have thus overcome the difficulties of distance from the place of consumption. Such innovations in the old laws of supply and demand sometimes acted disadvantageously to the producer, as the competition became excessive, and in the case of a perishable article such as milk the town distributer took advantage of this condition of things, and put down the price of milk accordingly. The telegraph, telephone, and railway system have lent themselves to the equalisation of prices, and the producer has thus become more independent with these facilities at his disposal. He can study the markets, and if the price of milk is not remunerative, he can calculate whether he would not do better by converting his milk into butter, or even cheese, and acts accordingly. The producer's difficulties are greatly intensified by the exacting demands of the consumer, who requires butter and cheese of good and uniform quality, and is not satisfied with the standard of quality current in the localities in which his lot is cast. He has either travelled or been supplied in times of local scarcity with butter and cheese made elsewhere, and which compare favourably with what is obtained in the locality. As a consequence preference is given to the foreign product, and the demand for the home product is diminished. All these causes tend to make our farmers milk producers only, but even in the matter of milk the quality has to be improved to come up to the demands or requirements of the contractor, who insists on a certain standard of quality being reached for the price paid.

Such keen competition brings prominently into notice the

question as to what breeds of cattle are best for the dairy-farmer, and the description of food best suited for the production of milk of standard quality. The solution of such questions requires great judgment and a considerable amount of capital, for the changes to be made must depend upon special selection, and only the best of cows can be kept for dairy purposes. These conclusions are practically illustrated by the success of the farmers of Canada and the United States, who in a comparatively short time have become our successful competitors, and supply us with large quantities of cheese of excellent quality. They are now turning their attention to the supply of butter, and the Canadian farmer will be helped greatly by his Government guaranteeing a minimum price for butter exported.

In England the manufacture of butter has gone largely out of fashion, chiefly on account of the poor quality made and its want of uniformity in composition. In other countries, notably in France and Denmark, these difficulties have been solved in different ways. In France the butter is bought from the smaller dairymen in blocks or pieces, which are collected, carefully sorted, and remade in a central factory. This butter is made up into 2 lb. rolls of two qualities, and also into lower grades in suitable form for the markets. In Denmark the butter is made more on the co-operative system, and the product is more or less salted and put into tubs for competition with Irish butter. The Government controls the manufacture, and as butter-making is Denmark's staple industry, every precaution is taken that the butter is uniformly good in quality, and is put into proper packages for exportation. Ireland, which is essentially a grazing country, has been slow to adapt her dairy industry to modern requirements, and as a result the demand for her keeping butters has fallen off in favour of Danish produce. Efforts are now being made to make up lost ground, but the revival of a lost industry is difficult of attainment, and it will be a long time before Irish butter will be in such demand as it was a quarter of a century ago. Our own colonies (and especially Australia) are making great efforts to produce butter suitable for our markets.

Margarine is an article of commerce which was prepared, in the first place, to meet a want, and afterwards, when the necessity passed away, the public, pleased with its quality, were determined to have it on its own merits. During the German invasion of France the supply of butter to France was stopped, and Hippolite Mége, a chemical inventor, prepared a fat from suet, free from smell, which he termed "Oleo." This oil is drawn from beef-suet at a low temperature, and then cooled

and pressed. After being cooled it is mixed with milk, a small proportion of sesame or earthnut oil, and sometimes with different quantities of butter. This mixture is churned in an ordinary churn, carefully cooled, worked, salted, and prepared for market. In every butter-producing country margarine is looked on with suspicion, and laws regulating its manufacture and sale are manifold and various. In this country all mixtures of butter and other fat are expected to be sold under the name of margarine, but the law is not in this respect strictly complied with, and margarine is often sold as pure butter. There are now several factories established in the United Kingdom, but the importation still continues large, many persons in the manufacturing districts of Lancashire and Yorkshire preferring good margarine to bad butter. The agricultural advocates in this country demand that it shall not be coloured in imitation of butter, that it shall be either left in its natural condition or coloured with some distinctive colour, so that it shall not appeal to the senses of taste and sight as a butter substitute, but something different. The representatives of our town population, who have to study closely the cost as well as the quantity of foods required by their constituents, consider that the Adulteration Acts should be put in operation with sufficient force to protect the public against the substitution of margarine for butter, and that margarine should be coloured and sold in as attractive a way as possible to suit the public taste. The struggle between these interests is keen and far-reaching, and any suggested alterations in the Adulteration Acts in favour of protection will be keenly contested and opposed by those who represent town constituencies.

The cheese entering into ordinary consumption is fairly stable in composition, will bear removal without risk of breakage, and improves by keeping within certain definite limits. The area of our cheese-supply is thus greatly widened, and we can draw from Canada, the Australian colonies, and the United States, as well as from the continent of Europe. The manufacture of cheese in this country has greatly diminished, and the selling of milk in the fresh state has, as before stated, been substituted. Good Cheddar and Cheshire cheese is still made, but on account of the fluctuations in price of the season's make, the improved quality of imported cheese, and the tendency to engage as little capital as possible in dairy-farming, cheese-making even in these districts is declining every year, foreign cheese taking its place.

In large towns soft or cream cheese, and others, such as Gorgonzola, Roquefort, Gruyère, and Parmesan, have come

more or less into fashion, and there is no doubt that Gorgonzola, on account of its price and quality, has largely taken the place of Stilton cheese. The foregoing may be considered fancy articles not in demand by the masses, but the cheese which has taken hold of the public taste is Cheddar, and on account of its composition and quality it deserves the premier position it holds. Joseph Harding of Maiksbury, one of the pioneers in dairy education, said that "cheese is not made in the field, or in the byre, or even in the cow; it is made in the dairy." Such an aphorism appears self-evident, but he was aware what details were required to be attended to in making the cheese that the quality might be uniform, stable, and of delicate flavour on maturity. This is not the place to trace up the many steps of progress taken by dairy-farmers in Canada and the United States before they could enter fairly into competition with our producers, but for many years now the general quality of this imported cheese has been excellent, and has received the appreciation it deserves. The occupiers of land in those countries have received advantages from two sources, viz., the low price of the land and the necessity of making cheese in large factories on account of scarcity of labour. In the initial stages of the industry factory working was beset with difficulties on account of ignorance as to the causes which determined the flavour of cheese. The living organisms which are the primary agents in this determination can only exist in pure colonies where cleanliness is enforced, and the dirty condition of some of the early factories caused very serious losses on account of the bad quality of the cheese made under such conditions. These defects are now to a large extent remedied, but even now the science of bacteriology as applied to cheese-making is in an embryotic state, and the changes taking place which determine the flavour are so subtle that microscopic research and chemical analysis do not appear to be refined enough as determining factors in these investigations.

In France and Italy the Roquefort and Gorgonzola cheese respectively afford proof that this branch of science has been more closely studied in producing these two descriptions of cheese. Roquefort is made from sheep's milk, and when the curd is put in the vat a specially prepared ferment is added to produce throughout it the mould which is its characteristic. Later on the cheese is pierced through to admit of air to hasten the growth of the mould, and an inspection of a finished cheese will show how successfully these operations have answered their purpose. The Gorgonzola is a mixture of old and new curd, and this mixture and its subsequent treatment answer the

intended purpose of producing a fairly soft cheese well marked and permeated with mould.

The substitution of margarine for butter induced some dairy producers to try similar experiments on cheese by depriving the milk, before being made into cheese, of more or less of its fat, and substituting for it animal fat. Cheese could be so made, but lard cheese or filled cheese, as it is called, has never become a regular article of commerce.

Tea, coffee, cocoa, and sugar do not stand in the same position as flour and meat as necessaries of life, but even amongst semi-civilised nations they have more or less passed out of the class of luxuries, and are considered to be necessities as a part of national diet. The chemist, when striving to estimate their value as heat-givers or flesh-formers, has fallen into error, because the human mechanism differs in many respects from machines of man's construction, and no rules can be laid down which can accurately prove what effect different substances have upon the human economy or how they operate. Attempts have been made to establish distinct relations between the amount of work performed by a human being during a given period and the amount of waste as measured by his secretions, but from the data obtained it is evident that much more has to be done before any estimate approaching to accuracy can be worked out.* It has, however, been observed in practice as well as by experiment that there are certain substances whose property is to retard the waste of the body, and tea, coffee, and cocoa especially appear to be of this class, and thus account for the universal demand there is for either one or the other of them as beverages. Sugar appeals more directly to the sense of taste, and as a food and flavouring material of other foods it enters largely into the dietary of mankind, and is in almost universal use. As a heat-giver it is largely used in temperate latitudes, whilst in colder regions fat supplies its place as a substance more easily obtained and better adapted to the conditions of climate. The tea of commerce no doubt came into popularity when cultivated in China only; in 1610 it was introduced into Europe, and forty years afterwards it became known in England. On account of its high price it could only be used by the rich, and the Princess Catherine of Portugal, who liked tea, having married Charles II., the East India Company specially imported some for her.

Money was wanted in those days of extravagance, and tea-drinking having become a fashion, a duty was levied on the

* Vide *Philosophical Magazine*, June 1866 (Supplement), "Experiments of Fick and Wisliscenus." (Editor.)

infusion, but no relation was fixed between the quantity of tea to be used and the infusion made from it. It followed, therefore, that the duties imposed were difficult of collection, and in the reign of William and Mary—1689—a duty was fixed on the tea as imported of five shillings a pound.

Prejudice against foreigners caused some persons to decry the use of tea, and Jonas Hanway in 1707 published an "Essay on Tea, considered as pernicious to Health, obstructing Industry, and impoverishing the Nation." In an appeal to a lady correspondent on the force of fashion with regard to tea, he says: "It is in your power to destroy this many-headed monster, which devours so great a part of the best fruits of this land." Competition between the Dutch, who at that early period had greater interest in the East than ourselves, and our East India Company caused tea to become the industry of the smuggler. Our duties were very high, and as tea was dry and not a perishable article, it lent itself to the operation of contraband trade. M'Culloch tries to put the smugglers' doings into figures, and states that "in the nine years preceding 1780 above 118,000,000 lbs. of tea were exported from China to Europe in ships belonging to the Continent, and about 50,000,000 in ships belonging to England. But, from the best information obtainable, it appears that the real consumption was almost exactly the reverse of the quantities imported, and that, while the consumption of the British dominions amounted to above 13,000,000 lbs. a year, the consumption of the Continent did not exceed 5,500,000 lbs. If this statement be nearly correct, it follows that an annual supply of about 8,000,000 lbs. must have been clandestinely imported into this country in defiance of the Revenue laws."

Whether this estimate is correct or not, it can be easily seen from the statute-book that changes in the law in the direction of stringency were frequently made, and that till the duties were largely reduced and a detective staff of experts established smuggling and adulteration were very prevalent. The monopoly of the East India Company kept up the price of tea, adversely affected its quality, and gave no encouragement to private enterprise. Efforts were made to bring the monopoly to an end, but vested interests were powerful, and the struggle to accomplish this desired consummation was protracted and fierce. Envy at the success of the Company also stirred up zeal in emphasising its iniquities, and a body of gentlemen combined to investigate its affairs and compare the prices charged with those obtained in Europe.

The results of the investigation were thus summarised :—

Profits realised by the Company in three years ending 1828	£2,542,569
Average	847,523
Excess of price received for the Company's tea over the price of such teas sold at New York and Hamburg	1,500,000

These figures, coupled with the odium attached to the monopoly, the desire for free importation, and the necessity of a change of administration, caused the charter to be abolished by the Act 3 and 4 Will. IV. c. 85, and thus gave freedom to our shipping trade to open up commercial relations with China.

Tea, being a stimulant without being an intoxicant, has become a general beverage, and the cry of a free breakfast-table has led successive Chancellors of the Exchequer to lighten the duty, and some of them to promise that, with the return of good times, the tea and similar duties on coffee and cocoa shall be abolished altogether. Whether this time of prosperity will be reached in this generation is difficult to say, for we have so increased our spending powers that in time of peace we have what may be termed a war budget, and an income-tax of eightpence in the pound in a season of peace speaks eloquently of national extravagance. During the period that the East India Company's charter was in operation no inducement was given to tea cultivation in any other country than China. Efforts were made to introduce it into India and Ceylon, but though the Society of Arts offered a prize for 20 lbs. weight of good tea grown in "the East Indies and other British colonies," this prize was not claimed till 1839. From this time more attention was paid to tea cultivation, and in Assam this industry has made steady progress. Ceylon at one time produced large quantities of coffee, but owing to the destruction of the trees by disease, attention has been directed to the cultivation of tea. The quality produced partakes greatly of blends of Assam and China tea, but in 1873 the quantity exported into this country was 23 lbs. only. In 1883 the imported quantity was 1,500,000 lbs., in 1893 it reached 64,218,062 lbs., and last year 74,023,810 lbs. These figures are given as record figures of an industry which has suddenly developed into importance.

It may be of interest to show the changes which have taken place in the origin of our tea-supply since the withdrawal of the East India Company's monopoly. The Chinese Government levy heavy duties on tea exported, and thus play

into the hands of other tea-growers. In countries with bad government there is a tendency both to take large profits and to make inferior goods, and the tea industry of China is a notable example. The quality of the tea was for many years irregular and disappointing, and as a result the demand for it has greatly fallen off; but of late years the quality has improved, and some importations are of exceptionally good quality and characteristic flavour. However, China tea has not yet turned the tide in its favour, as will be seen from the following figures, taken from a report of the Commissioners of Chinese Customs at Canton and from other sources :—

Year.	Of each 100 lbs. Tea imported into Great Britain,			
	China contributed	India contributed	Ceylon contributed	Other Countries.
1864 . .	92.55	2.84	...	4.61
1870 . .	89.06	9.17	...	1.77
1874 . .	81.90	10.12	0.30	6.90
1880 . .	76.43	21.81	0.08	1.68
1885 . .	65.84	30.35	2.00	1.81
1889 . .	39.88	42.93	14.70	2.49
1893 . .	15.45	51.94	30.85	1.76
1895 . .	11.81	52.45	33.38	2.36

Coffee and cocoa admit of comparison and contrast. They compare with each other in being difficult of preparation as articles of diet, and their consumption as beverages is one of contrast, coffee steadily diminishing in consumption and cocoa increasing. When these two articles are compared with tea it will be seen how readily tea lends itself for use as a beverage. It can be prepared by simple infusion in a few minutes, and for its flavour is not dependent on roasting or other preparation. Coffee, on the other hand, requires skill, care, and time to fit it for use, and the beverage is far more expensive than tea when made. Its consumption has gone steadily down from 284,540 cwts. in 1880 to 237,278 cwts. in 1894.

Cocoa is still more difficult of preparation than coffee, but the public are used to having it prepared as a food or drink when mixed with other substances. The cocoa-bean contains 50 per cent. of fat in its natural state, and the presence of this fat renders solution difficult. This difficulty has been overcome, either by pressing out a quantity of the fat or by adding

to the ground cocoa-beans farina, sugar, and flavouring materials to change it into a chocolate. In 1880 the quantity cleared for home consumption was 10,522,106 lbs.; in 1894 the quantity cleared had increased to 22,426,508 lbs.

Sugar.—The quantity of sugar consumed annually per head of the population in the United Kingdom now amounts to 80 lbs., having nearly doubled in the last quarter of a century. This increasing demand has stimulated production, and the increased supply, coupled with the advantage of bounties granted to their exporters by France, Belgium, and Germany, has brought the price of sugar to such a low level that it has increased consumption, and at the same time placed nearly the whole of our refined-sugar supply in the hands of the foreign manufacturer.

The sugar-cane was for many hundred years the source of the sugar-supply, and as it grew in districts where fuel and water were scarce, it was necessary to manufacture raw sugar of two classes, viz., that which was intended to go into consumption as such, and that which was prepared simply for remanufacture into refined sugar. It followed that both classes of sugar would be imported into those countries having the most direct commercial relations with the sugar-producing districts, and as colonies were more or less favoured by the mother country, it was natural that Bristol and London were the first sugar ports, and afterwards the more modern Liverpool. Sugar refining was for a long period an important industry both of Bristol and London, but through the extension of beet cultivation on the Continent the refining of sugar was taken up by France, Belgium, Holland, Austria, Hungary, and Germany. The beet industry was carefully nursed and fed by bounties in one form or other till competition began to weaken our refining industry, and at last almost completely kill it. In this country, when sugar duties were imposed, the rates of duty bore a relation to the quantity of refined sugar the particular class of sugar was supposed to yield, but in the Continental countries named the refineries did not work on duty-paid sugar. As the sugar went into the refinery a presumptive charge was raised against the refiner in terms of refined sugar. This charge was much lower than it ought to be, and as a result a larger quantity of sugar was produced than the presumptive charge. The actual yield was not taken into account by the authorities, and the sugar produced in excess of the presumptive yield was free of duty. When this sugar is exported drawback at the refined sugar rate is paid to the exporter, and this bounty to the exporter

amounts to such a sum as to enable him to sell in our markets at prices ruinous to our refiners.

When this subject of bounties was taken up by the Foreign Office some years ago, it was proved that in one year the total loss of revenue from surplus sugar escaping duty was, in France, £4,000,000; Germany, £1,000,000; Belgium, £550,000; Holland, £162,000; and that the bonus on export was, in France, £3,180,000; Germany, £1,000,000; Belgium, £550,000; Holland, £162,000.

The effect of the bounty-fed sugar has been in this country to shut up nearly the whole of the refineries manufacturing loaf-sugar; and even at Greenock, where "pieces" are generally made, they can only send their goods to certain ports in England where the carriage is low, but other parts cannot be touched without loss. It is remarkable that the taxpayer abroad is willing to be taxed to pay such enormous bounties to a favoured industry, and it is wonderful to see such forbearance exercised in a matter which is so palpably iniquitous in its incidence and unjust to the community at large.

The development of the beet-sugar industry in Europe has had a disastrous effect on sugar-producing colonies. From the best information attainable, it would appear that the proportion of sugar imported from our West India colonies, as compared with the total importation, was—

Years.	Per Cent.	Years.	Per Cent.
1801–1810	91.1	1872–1875	23.3
1846–1850	38.9	1876–1880	20.9
1851–1855	38.8	1881–1885	13.8
1856–1860	35.4	1886–1889	8.2
1861–1864	33.2	1893–1895	5.3

It will thus be apparent that the cane-sugar industry is seriously crippled by the production of beet sugar on the Continent, fed as it has been by bounties and premiums from its inception early in the century, and the quantities imported into this country last year will show how enormously this trade has developed during recent years.

Sugar imported from the following countries in 1895:—

Refined and candy—	Cwts.
From Germany	9,385,566
„ Holland	2,019,284
„ Belgium	702,262
„ France	1,981,366
From Europe	14,088,478
„ United States and other countries	58,795

	Cwts.
Raw sugar—	
From Germany	6,827,959
„ Holland	312,877
„ Belgium	1,085,346
„ France	840,715
From Europe	9,066,897
„ other countries	7,943,105
Total sugar—	
From Europe	23,155,375
„ other countries	8,001,900
	31,157,275

The definition which has been given by a manufacturer, of adulteration, that it is one of many forms of competition, can only hold good provided the adulterating material is a good substitute for that which it displaces, is known to the purchaser, and is sold at a price which is not to the consumer's prejudice. Thus the weighting of calico by excessive sizing is a base adulteration, and is resorted to for a fraudulent purpose; but the dressing of calico in imitation of flannel and selling it at a correspondingly low price under the name of flannelette has been held to be not even an offence under the Merchandise Marks Act.

To protect the community against adulteration, it has been necessary to put in force certain Acts which, although the word adulteration has not been mentioned either in their title or in the text, are to all intents and purposes Adulteration Acts; and those have rendered excellent service during the comparatively short time they have been in operation.

For many years this duty was thrown indirectly on the Inland Revenue Department in connection with those articles of food and drink liable to duty, and in this way tea, coffee, pepper, arrowroot, alcoholic drinks, and tobacco were protected from adulteration, not on account of the health or saving the pockets of the consumer, but simply to secure the revenue. As indirect gave place to direct attention, so the duties on food were either lightened or removed. With small duties on such commodities as tea and coffee, it was scarcely worth while to resort to adulteration, and consequently the collection and redrying of exhausted tea-leaves has gone out of fashion, and coffee and chicory, which now are charged with the same duty, no longer come under the critical eye of the Government analyst, unless chicory substitutes are introduced which have paid no duty. It may appear amusing that a substance like chicory, which first came into notice as a coffee adulterant, should be in its turn adulterated, but at different times during the last twenty

years large seizures have been made on the premises of different chicory roasters of chicory adulterated with mustard husk, dog biscuits, roasted bran, roasted acorns, and other vegetable substances which readily lent themselves to chicory sophistication. In this list it seems somewhat extraordinary that mustard husks should be found, but the fact was, the chicory roaster who used them was also a mustard manufacturer. The mustard husks were a by-product in the manufacture of mustard, and practically unsaleable, but it was thought that after roasting they could not be detected in chicory, although their peculiar structure, when viewed as microscopic objects, immediately revealed their presence.

The weakening of Government control on account of low duties stimulated adulteration, but it was only within the last twenty-five years that municipal and other local authorities organised sufficiently to attract attention to the prevalence of the general adulteration of food, and the necessity of providing the requisite machinery for coping with this widespread fraud on the consumer. To make an Adulteration Act effective it was necessary to appoint analysts capable of detecting adulteration, and to provide inspectors whose duty it would be to obtain samples for submission to the proper analyst. The Act of 1872 gave power to local authorities to appoint an analyst and inspectors for their respective districts, and under that Act appointments were made in 26 boroughs and 34 counties out of 171 boroughs and 54 counties to which the Act applied.

The Act was generally worked in an academic manner rather than on commercial lines. Impurities from whatever causes were looked upon by the general body of analysts as adulterations, and trade was so interfered with that in 1874 a parliamentary committee was appointed to inquire into the operation of the Adulteration of Food Act of 1872.

The report recommended certain alterations and additions, the most important being the examination of tea in bond, and the appointment of the Commissioners of Inland Revenue as referees in disputed cases, who could get the reference samples examined by their chemical officers.

In the following year the Adulteration Acts were repealed by "The Sale of Food and Drugs Acts" of 1875. This Act, after giving a definition of the terms "food" and "drug," enunciates what are offences, the appointment and duties of analysts, and the necessary proceedings to obtain analysis, as well as how proceedings are to be taken against offenders, the expenses of executing the Act, and special provision as to tea.

In 1879 this Act was amended by the Act 42 and 43 Vic. c. 30, and in 1887 the Margarine Act came into operation,

which made further provision for protecting the public against the sale as butter of substances made in imitation of butter, as well as of butter mixed with any such substances.

Unfortunately, considerable apathy has been shown both in bringing the Act into operation and also in obtaining samples for analysis when analysts and inspectors have been appointed. No provision was made to make the Acts compulsory, and consequently local authorities, being at liberty to do what they please in bringing the Acts into working order, have in many cases allowed adulteration to proceed without let or hindrance. The representative of the Local Government Board recently stated to the Committee on Food Products Adulteration that in 1893 there were forty-five districts, having an aggregate population of nearly three millions, in which the Adulteration Acts were either not put in operation at all, or were so laxly enforced as to be practically useless, the samples taken in the year over the whole area being 496, or one sample for every 5720 persons.

With all these disadvantages, however, the Acts, though imperfectly administered, have done much good. From the statistics collected by the Local Government Board, we gather that in the five years ended December 1881 the percentage of samples adulterated was 16.2; in the next five years the percentage was 13.9; in the next five it was 11.7 per cent.; and in the year 1893 there was a slight increase in the percentage of adulterated samples, viz., 12.9 per cent. In that year 37,233 samples were examined, of which 15,543 were milk and 5784 butter, or, in other words, 57 per cent. of the samples taken for analysis were dairy produce.

Of the milk samples 14.9 per cent., and of butter 13.7 per cent., were reported as adulterated.

The home producers of butter have for some time been agitating for an examination of imported butter at the port of entry, as, from documentary and other evidence attainable, they had satisfied themselves that a large proportion of foreign butter imported contained fat other than butter fat. To prove the accuracy, or otherwise, of the statements made, the Government have during the last twelve months had samples taken from consignments from different countries and at various ports, and examined them at their own laboratory.

The tabular statement of the results obtained presented to the Food Products Adulteration Committee are interesting from the two points of view of origin and composition, and may be thus summarised:—

Holland,	of 220	samples	54	were adulterated.
Denmark,	„ 178	„	8	„
Sweden,	„ 83	„	...	„
Norway,	„ 21	„	2	„
Belgium,	„ 5	„	...	„
France,	„ 60	„	...	„
Russia,	„ 34	„	5	„
Germany,	„ 124	„	37	„
United States,	„ 51	„	...	„
Canada,	„ 39	„	...	„
New Zealand,	„ 18	„	...	„
Australia,	„ 53	„	...	„
Argentina,	„ 4	„	...	„
	890		106	Per cent. adulterated, 11.9.

It would appear that at the present time the Government authorities have no power to detain or seize adulterated butter, but as the defects of the law have been fully pointed out to the Food Products Adulteration Committee, it is expected that in their report they will prominently notice the defects and omissions in the law, with a view to legislation on the subject.

In concluding this article on the food of the people, it is important to observe the effect of the great changes in the source of supply, on the quantity consumed per head of the population, and the bearing the changes in prices have had upon this consumption. It would be easy to show from the statistics of our savings banks, and other institutions for the investment of money, that there is a large and increasing accumulation of wealth, and consequently the purchasing power of the nation has correspondingly increased. The care and attention, also, which have been bestowed on elementary education, and in the last few years on technical education, tend to give the great masses of the people a more refined taste, and with it a greater desire to make the home better and its surroundings brighter. The tendency to drunkenness is not so great as it was. In high places temperance has become a habit, and light foods and drinks are taking the place of the heavy dinners of a bygone age. Variety in dietary has tended to the same end, and improvement in cooking has helped to wean us as a nation from the drunken and gluttonous habits which marked the first half of the century.

The electric telegraph and steam-engine have been the greatest civilising agents of the century; by the power and control of electricity and steam the world has to a great degree become one nation, the wants of one portion being a surplusage in another. In this way commerce asserts its power, and the exchange of commodities becomes a web of unity, binding peoples

together, and cementing interests for the mutual good and stability of mankind. In the competition the industries of some of the older nations have to suffer, and, as with the agricultural interest in this country at the present time, they become crippled through the success of more favoured competitors; yet the wants of mankind are supplied, and at prices not thought possible years ago.

If space permitted, it would be interesting to point out the changes which are steadily being effected in the source of supply of different commodities, of which tea and sugar are good illustrations, but the struggle for survival will be keener as countries get more developed. India, Roumania, Turkey, and the Argentine Republic are making great progress in wheat culture, and each country exports largely to Great Britain; whilst America, though still exporting her ordinary quantity, is sending less from the Atlantic and more from the Pacific ports. Labour, and other expenses incidental to the production of the crop, will be the chief factor in settling what country will be foremost in the competition; but, as has been before stated, it is satisfactory to us to know that distance is no impediment, and that the national statistics enable us to form an opinion before the harvests are gathered as to the countries which are likely to have a surplus for our requirements.

The two following tables give the consumption per head of the population of the principal articles of food imported, and though not a part of the subject treated in this essay, tobacco, wine, spirits, and beer have been added for comparison.

It is satisfactory to observe that the consumption of tea and sugar has greatly increased, for these two articles of foreign production indicate that a temperance drink like tea has continued to have a firm hold of the nation, and their use has more than kept pace with the increase of the population. The change in the relation between raw and refined sugar proves how seriously the British refiner has suffered from the bounty system of the Continent, and at the present time nearly the whole of our loaf-sugar is of Continental manufacture, as previously stated.

Quantities of the under-mentioned Articles retained for Home Consumption per head of the Population of the United Kingdom :—

	1880.	1885.	1890.	1894.
Bacon and hams . . . lbs.	15.89	11.57	13.55	13.29
Beef, salted and fresh . . „	3.22	3.47	6.04	6.59
Meat, preserved, not salted . „	2.07	1.54	2.00	1.49
Mutton, fresh . . . „	...	1.78	4.93	6.62
Pork, salted and fresh . . „	1.25	1.14	0.79	1.12
Butter . . . . . „	7.39	7.21	5.83	7.27
Margarine . . . . . „			3.16	3.17
Cheese . . . . . „	5.63	5.53	6.23	6.38
Wheat . . . . . „	175.64	188.99	179.70	201.48
„ meal and flour . . „	33.84	48.87	46.66	54.71
Potatoes . . . . „	31.49	7.13	5.73	7.68
Tea . . . . . „	4.57	5.06	5.17	5.52
Coffee . . . . . „	0.92	0.91	0.75	0.69
Cocoa . . . . . „	0.30	0.41	0.54	0.58
Sugar, raw . . . . . „	53.98	59.05	44.99	40.17
„ refined . . . „	9.42	15.89	28.22	39.89
Eggs . . . . number	21.58	27.80	32.91	36.68
Rice . . . . . lbs.	14.08	7.64	9.38	7.26
Tobacco . . . . . lbs.	1.42	1.46	1.55	1.66
Wine . . . . gallon	0.45	0.38	0.40	0.36
Spirits . . . . „	1.07	0.96	1.02	0.97
Beer, British . . . „	...	27.09	30.00	29.47

Average Price of the under-mentioned Articles imported into the United Kingdom, deduced from declared quantities and values :—

	1880.	1885.	1890.	1894.
Bacon . . . . . cwt. *s.*	40.03	40.55	36.82	43.82
Hams . . . . . „ *s.*	46.53	50.91	47.45	49.07
Beef, salted and fresh . . „ *s.*	47.64	49.01	40.43	38.84
Meat, preserved, not salted . „ £	2.91	2.94	2.65	2.69
Meat unenumerated . . „ £	2.88	2.61	2.09	1.91
Pork . . . . . „ *s.*	33.43	35.96	30.07	38.09
Butter . . . . . „ £	5.52	5.48	5.23	5.23
Margarine . . . . . „ £		3.60	2.86	2.74
Cheese . . . . . „ £	2.87	2.22	2.32	2.42
Wheat . . . . . „ *s.*	11.08	7.83	7.80	5.35
„ flour . . . . . „ *s.*	16.49	12.19	11.51	8.36
Potatoes . . . . . „ *s.*	5.84	6.33	7.36	7.62
Tea . . . . . lb. *d.*	13.47	12.06	10.65	9.59
Coffee . . . . . cwt. £	4.44	3.19	4.63	4.82
Cocoa . . . . . lb. *d.*	8.86	8.43	7.58	7.70
Sugar, raw . . . . cwt. *s.*	21.71	13.89	12.64	11.67
„ refined . . . „ *s*	29.23	18.15	16.32	15.52
Eggs . . . . . doz. *d.*	8.61	8.42	8.00	7.65
Rice . . . . . cwt. *s.*	9.52	7.82	8.56	7.62

The review of the progress made in the taste and refinement of the nation as judged from the food standpoint is full of promise for the future. Difficulties of time and distance which twenty years ago seemed insuperable have been overcome, and the Australian, New Zealander, and South American can send to us fresh meat, butter, or fruit, without risk of damage, provided the packing is properly attended to. The rich and abundant orchards of California are placed at our disposal, and grapes, pears, and peaches are now common property, sent over with regularity, and enrich our selection of choice fruits. Every year witnesses new departures in the preparation of fruit for the British markets, and the Crimea is likely in the near future to send fruit to this country, as it does now to other parts of Russia.

This interchange of interests is silently though surely working in the direction of peace and goodwill, and the intellect and the heart being educated at the same time, it is not too much to hope that the progress of civilisation and the effect of mutual intercourse will remove prejudices and make the nations incline to peace and good-fellowship.

ESSAY III

SUBTERRANEAN TREASURES—COAL, IRON, &c.

FIVE hundred and fifty million tons is a quantity that is almost inconceivable to the human mind, and yet it approximately represents the amount of coal that was dug out of the earth and converted into smoke and ashes in the course of a single year. Of this vast total Great Britain is responsible for nearly one-third, or, to be precise, 189,652,562 tons in the year 1895. With this production our country far outstrips all others. Even the United States are twenty-five million tons behind; but they hope to surpass us very shortly, and in this expectation they are justified, considering their area and their rapidly increasing population and manufactures. The present state of trade in this country, and of the civilisation which is based upon it, may be said to depend on three things—our men, our ships, and our coal. These in their turn represent our cumulative progress from the early times, from the Middle Ages, and from the beginning of the present century. Upon fuel all our manufactures now depend, for there is scarcely a single industry that can dispense with heat and steam-power, so that we should indeed be in a pitiable plight if the output were reduced to the ten million tons that were produced in 1800. A scuttleful of that size would not even satisfy domestic demand at the present day. Even the respectable total of a hundred million tons was not sufficient thirty years ago, when the enormous growth so alarmed the country that a Royal Commission was appointed to investigate, *inter alia*, the probable duration of the coal-supply. The data for such a calculation were necessarily so speculative that no absolute period could be named, but it may safely be said that another two or three centuries are well assured not only against cold, but also against loss of power.

Whilst the production has thus developed, the labour employed has similarly increased, but naturally not at the same rate, owing to the wider introduction of machinery. Trustworthy statistics for the beginning of the century are not to be

obtained, but it is estimated that 50,000 workpeople were employed to raise the ten million tons.

Now, according to Her Majesty's Inspectors of Mines, there are employed in mines under the Coal-Mines Act no less than 700,284 workpeople, of whom about 80 per cent.—564,638—are underground workers. Not quite all these are engaged in coal-mining, as the Act covers mines from which about eleven million tons of other materials, such as fireclay, oil-shale, and iron ore, are obtained, in addition to the coal-mines, yielding 189 million tons of coal. Taking these proportions, it will be seen that the output of coal has increased nineteen times, and the number of labourers somewhere about thirteen times. The advance of the labourer himself cannot be estimated in figures, but it has been enormous, as the following pages will show.

Strange as it may seem, it was not until 1799 that slavery was finally abolished in this country, but in that year an Act was passed freeing the Scottish colliers from their state of serfdom. Some of their disabilities had been removed about forty years before, but they were always regarded as the lowest of the low—as pariahs, in fact—not only in Scotland, but also in England. South of the Tweed they had never received much attention from the Legislature, but rather they suffered from its neglect; and even at the beginning of this century they were omitted from the benefits conferred upon factory labour by several Acts of the time. Popular attention was, however, being strongly attracted to the condition of the mining classes by the increasing frequency of disastrous fire-damp explosions, and the first and greatest advance of the century for the collier was made in the discovery of the safety-lamp in 1815.

Prior to that date the miner had to work with a naked light as long as he dared, or else to use the inefficient illumination of sparks given off by revolving a steel wheel against a flint. The ventilation of the mines, although constantly being improved, was not sufficient to thoroughly remove the gas when the seam produced it in quantity, and so it was a general practice to fire the gas in the mine. For this purpose, before the men went into the pit, one man, dressed in heavy water-sodden clothes, would crawl up to the dangerous places and set light to the gas with a candle mounted on a long stick or on a board which he pulled along with a string. Sometimes this had to be done several times a day. It was very evident that lights had to be protected, and the problem was successfully and simultaneously solved by two independent inventors, Sir Humphry Davy and George Stephenson. Great as the invention was, the fame of neither rests entirely upon it, for Stephenson was the father of railways, and Davy, central figure

of the illustrious trio comprising Rumford and Faraday, was the discoverer of sodium, potassium, aluminium, and many another item of our chemical knowledge. Stephenson found that the flame from a mixture of fire-damp and air would not pass through narrow tubes, and Davy found that wire-gauze served the same purpose. Wire-gauze is now universally adopted, but useful lamps were made on both principles.

The joy with which this invention was received can better be imagined than described, and many thought that explosions were a thing of the past, but a very few years showed that these catastrophes were more numerous and much more disastrous than before. This, however, was easily explained. Coal-mining was growing vigorously, workings were being greatly extended, and more especially the speed of ventilating currents was largely increased. In stronger draughts the lamp, as originally constructed, is not safe, since it allows the flame to pass through the gauze, and to obviate this many improvements were, and are still being, made. Finality has not been attained, yet there is probably no great room for improvement. If anything more is to be done, it is only to slightly increase the safety and the light-giving power of the lamps, of which there are so many varieties on the market. Safety-lamps will most likely be displaced in the near future by portable electric lamps, of which many good ones are already in use. The probability of an explosion through the exposure of the incandescent filament by the breakage of a bulb is very remote, and may easily be guarded against. At the present time the weight and expense of these lamps are their most objectionable features.

Until recent years coal dust was not recognised as a possible cause of explosion, but it is now well appreciated that many kinds of dust, when they are in a fine state of division and suspended in the air, will propagate flame with explosive violence, especially when a small percentage of gas is present. The tendency is now to ascribe all explosions to dust rather than to gas, but the primary cause of an explosion at the present time is not the lamp, but the flame from blasting operations. As far as the dust itself is concerned, the main precautions now taken are to thoroughly damp the dust, so as to cause it to settle and become inert. In all probability some legislation on this matter may be looked for at an early date, and precautionary measures will be enforced where dangerous dusts occur, in the same way that the use of safety-lamps is compulsory when fire-damp is present.

Explosions naturally attract more attention than other sources of danger, because many lives are so often involved in

one catastrophe, but, as a matter of fact, they are only accountable for about fourteen per cent. of the total fatalities during the last decade. A far more fertile source of accident is to be found in falls of rock, due often to the treacherousness of the roof or strata over the coal-seam. During the last decade this was accountable for no less than forty-four per cent. of the deaths. Nothing will prevent this danger but constant vigilance and strict attention to the timbering in the mine. Division of labour, whereby special men are told off to attend to the timbering and the underground roads, has doubtless improved the condition of affairs.

The ventilation of mines has already been referred to, but it may be added that practically all the improvements are due to the present century. In its early part this subject attracted attention to the exclusion of most other details, but it may be said that 1860–1870 saw the introduction, on a considerable scale, of the fan, which is now almost the only admissible way of passing air through a colliery. At one time furnaces were used, if indeed natural ventilation was not trusted to, but now they have mostly disappeared. The present tendency is to revert to smaller-sized fans, but they are run at very much higher velocities, so as to pass the requisite quantity of air. Authorities differ as to what should be allowed, but it is often taken that 100 cubic feet of air per minute should be passed through the mine for each man, and 600 cubic feet for a horse. More air is, of course, required where much gas is evolved; but the men are not likely to be choked with bad air as long as this quantity can be kept in circulation.

Now let us turn to the more mechanical side of mining, to the means for getting the coal and for facilitating the men's work, whereby the enormous outputs of the present day are obtained. The coal itself occurs as a layer or bed, which may be only a few inches in thickness, or it may be as much as thirty feet, as in the South Staffordshire thick seam. Coal thinner than fifteen inches is not much worked, as it does not pay to extract the adjacent worthless material to make room for the roads. The most arduous part of the coal-miner's occupation consists in undercutting the coal—that is, in extracting part of the coal, so that the rest will fall down. To do this, the miner lies partly on one side, with one leg drawn up under him, and picks away with a light pick, weighing about 2 to 2½ lbs., and having a handle some 24 to 30 inches long. As near to him as possible is placed a safety-lamp, which gives about as much light as a very ordinary candle. The constrained position and inefficient light do not conduce to efficient work.

The substitution of machinery for hand-labour of this kind has absorbed the attention of many inventors during the last fifty years, and there have been very numerous forms of machines put on the market. An early type of machine resembled the miner in its action, as it had a swinging pick, but this form is mostly abandoned in favour of those machines which have an endless chain, or a wheel, or a revolving bar, carrying cutter teeth to scrape away the coal. There are, however, two other types which have found an extended use. In one a reciprocating chisel, very much like a rock-drill, is used, and in the other a revolving borer cuts an annular groove, and the projecting core is then extracted to leave a circular tunnel or road.

It would be invidious to compare these machines, as any and all of them are capable of doing good work when they are properly constructed and used. In order to give satisfaction the machine must be light, and small enough to be managed by two or three men working generally in a confined position. It must be strong, so as not to be injured by any falls from the roof of the coal-seam. It should be able to start operations without any manual preparation, and it must have plenty of power, so as to cut through obstructions or patches of hard materials that are so often encountered.

In this country these machines have as yet found only a limited use, although their employment is extending fairly rapidly. This has been more especially the case since electric transmission of power has come so deservedly into fashion, for it offers exceptional facilities to the use of these machines. They have to be moved very frequently, and the trouble of altering the power connections is limited to changing the position of a few yards of insulated wire. Good work has been and will be done with compressed air, but it is far more troublesome to constantly alter the position of pipes. Steam-engines attached to the machines, it need hardly be remarked, are quite out of the question.

The actual saving is a very variable quantity, depending on so many circumstances. Mr. G. Blake Walker, for instance, mentions a seam three feet in thickness, where hand labour made 25 per cent. of slack, or small coal, as compared with 15 per cent. by machines, and the saving amounted from 8½d. to 1s. 6d per ton, of which two-thirds resulted from the larger proportion of lump coal.

When the coal is undercut as far as is considered advisable for reasons of economy or safety, the props are withdrawn. In some mines the coal will fall without further aid, or it may be brought down with a slight expenditure of force applied by

wedges or crowbars. Very often, however, the coal has to be blasted down, and for this purpose gunpowder is still used to a limited extent. At one time it was the sole explosive, and, as is only natural, the colliers were very careless in its use. Faraday on one occasion, whilst resting, asked where the men kept their store, and was told that he was sitting on a bag of it. At the beginning of the century, when sinking a shaft, powder was spread about and exploded by dropping fire on to it when men were in safety. The usual method was, however, to use a squib or a straw filled with powder, and ignited by a burning candle-end. The introduction of Bickford's fuse was a great advance, as it enabled the charge to be ignited with greater certainty and facility. After safety-lamps were introduced it was found possible to ignite the fuse with a wire heated in the lamp, thus avoiding the open flame.

The last twenty years have, however, seen many safer explosives introduced. Their name is legion, and it ends in *ite*—roburite, bellite, tonite, westphalite, securite, ammonite, gelignite, and safety dynamite, for example. Each maker, of course, claims that his explosive is safe for use in fiery mines, if properly used; but extensive series of experiments carried out by disinterested bodies, such as the North of England Institute of Mining Engineers, and many others, show that fire-damp and coal dust, mixed with air, are liable to be ignited by them. There is not the least doubt that any and all of them are much safer than blasting powder. A charge of greater power occupies less space, is more safely and easily handled, and gives very much less or practically no flame. As a further aid to safety, the cartridge has been enclosed in a casing filled with water, in Heath & Frost's or other makes of water cartridges. In this way a certain amount of benefit has resulted.

Of the many other methods which have been proposed to overcome the dangers incidental to igniting the charge with the fuse, the electric method is the most advantageous. With the aid of a portable frictional or magneto-electric machine, or a battery and a couple of wires, the blasts can be fired from any distance with the minimum of danger.

Anything which tends to produce an open flame in the mine is certainly objectionable, but at the present time it does not seem feasible to dispense with explosives, and it is only to be hoped that some perfect substitute may in the course of time be discovered. This has not yet been done, but very many attempts have been made. "Willy Brown's Iron Man" was in use a hundred years ago, but was inefficient. About 1885–1887 great ingenuity was expended on mechanical devices, such as multiple wedges, but their scope of usefulness is

limited. Oftentimes the coal is too soft, and simply crumbles around the wedge, or it is too hard to be moved, and only breaks off short. It must not be forgotten that although the theoretical power of a wedge is unlimited, yet the range through which it can act is not great. A marked disadvantage of many of these wedges is, that the men have to work close to the falling coal, and thus are liable to injury.

Still another substitute for blasting has found some favour. Smith & Moore's lime cartridge consists of blocks of compressed quicklime. On placing these in the bore-hole and pumping in water, the lime expands and brings down the coal. They are, however, somewhat slow in action, and they whitewash the coal, thereby spoiling its appearance for market.

In what has preceded reference has only been made to blasting down the coal itself, but explosives are still more necessary under similar circumstances as regards the presence of gas in driving roads through rocks lying near the coal, since the rocks are harder. It is very certain, therefore, that blasting cannot yet, except at a prohibitive cost, be dispensed with in coal-mining. A trustworthy authority gives this cost at 14½d. per ton as the result of detailed experiments in a particular mine.

There is no branch of mining that has seen greater improvement during the present century than the removal of mineral from the working face to the bottom of the shaft. At the beginning of the century human labour and, to some extent, animal power were employed for carrying or dragging the coal, and mechanical haulage was quite unthought of. At the present day women never work underground in this country, and lads have taken the place of children where the seams are so thin that the methods of mechanical or horse haulage cannot be used, as in Somersetshire.

Those who are curious on the question of early methods of transportation may consult the various parliamentary reports on the mining industry, and upon women and child labour, that appeared from 1839 to 1843. The details there given are too harrowing to bear repetition in detail, but they show women carrying loads of twelve or fourteen stone on their backs up steep inclines, children harnessed to heavy sledges, and other horrors. These methods were most inefficient, and it is wonderful that they persisted as long as they did, for wooden tram-rails, and later on iron rails, were not uncommon, as were also flat trucks or rollies with broad wheels. All systems in 1850 were fast giving way to that of taking the coal direct from the working face to the surface in wooden or iron trucks run along the underground roads on rails, and loaded bodily into a cage

which worked up and down the shaft on guides. In many cases these trucks were run by a special class of men called putters or trammers, but horses, donkeys, and mules were extensively employed. At the present date this manner of working still holds, but in all larger and better-appointed collieries it is supplemented by mechanical haulage. In fact, putters and horse haulage are only used on what may be called the feeders of the main lines. Mechanical haulage alone might form the subject for a large book, so it will not be possible to do more than indicate briefly the main features of the various systems. These are rope haulage by the main rope, main and tail rope, and endless rope; locomotive haulage; and electric haulage. In rope haulage trucks are moved either singly or in trains. By the main-rope system they are hauled up inclines and run back by gravity; in the tail-rope system they are drawn one way by the main rope, and returned by a lighter rope passing round a pulley at the end of the line from the back of the train to the engine. In the endless rope one or more trucks are attached to an endless rope in a similar manner to cable tramways, which may be seen at work in London, Edinburgh, and Birmingham, only that in collieries the rope is not buried. The first two systems work intermittently and the latter continuously. Their advantages and drawbacks are fully discussed in a report of the North of England Institute of Mining Engineers. The ropes are driven from engines placed at the surface or in a specially prepared underground chamber.

Locomotive haulage, as far as steam locomotives are concerned, has but a limited scope, owing to the size of the galleries, short length of journey, and danger of fire. In a few cases, however, they have been used. Compressed air locomotives have some advantages over steam, as they are safer and do not foul the air.

Electric haulage is now growing in favour to an enormous extent. Particularly has this been the case during the present decade, and the discussion that rages around tramways in towns is being carefully followed by the mining engineer. Some electric locomotives carrying accumulators have been used underground without much success, as the batteries will not stand the jolting. Much better results are obtained with some system of overhead conductors, from which the moving locomotive receives current, as in the Leeds tramway system, for instance. The first installation on this principle was at Zauckerode, in Saxony, in 1882. Another method of applying electricity is to instal motors to drive rope haulage systems. In this way power can be applied wherever it is most advantageous. What the predominating system will be in the future it is not

easy to foretell. All the systems of rope haulage have been brought to a high state of perfection, and each is to be preferred under certain circumstances.

After the coal arrives at the bottom of the shaft it has to be lifted to the surface, and, as stated above, this was frequently done by women, who walked up ladders or a kind of spiral staircase. Windlasses, horse-whims, and steam-engines were also employed, but at the present time there is hardly a single mine without a well-equipped steam-engine. In 1850 an out-turn of 700 to 800 tons in a day of twelve hours from a depth of 80 to 100 fathoms was considered good work, but now 1200 tons raised from a depth of 420 yards in eight hours is not at all out of the way. To do this the full coal-tubs have to be replaced in the cage by the empty ones in eight seconds, so as to allow forty-two seconds for the winding, when the maximum speed may be as high as thirty miles per hour. It is a marvellous sight to stand at the top of a busy shaft like this and watch the orderly work proceeding, without undue haste or scurry, and yet so regularly. The pit-frames or headgear are large and substantial structures, often built of steel, and safety arrangements for preventing overwinding are provided. Greater attention is paid to economy of fuel; and although compounded engines and condensers are not yet the rule, yet they will probably be generally adopted in the future.

The age is one of electricity, and the coal-miner has not been behind-hand in adapting this power to serve manifold purposes. Pumping, drilling, lighting, hauling, ventilating, winding, blasting, signalling, and, in fact, all other operations are now often performed by its aid. The electric current can be generated on the surface, and can so easily be carried to any part of the mine, whether near or far, and there utilised with the minimum of trouble and expense and the maximum of economy. Compressed air has, indeed, many advantages, and so has hydraulic transmission of power, but, unless under exceptional circumstances, the use of electricity will spread. The danger of shock can be reduced to practically nothing with ordinary care; and sparking, which might possibly ignite gas, can be guarded against by enclosing the motors, or abolished altogether by recent systems of multi-phase currents and motors.

A still more important problem of the future is the transmission of power from the mines to the centres of industry. Power has thus been tapped from waterfalls, such as Niagara, and conveyed long distances by electricity without trouble, and in the same way large plants might be erected at the mine to burn the coal in order to generate the current. The transport of coal, in fact, is really a special form of the transmission of

energy, and if it can be shown that it is cheaper to burn the coal at the colliery rather than to first carry it long distances before its power is rendered available, then there will be a most tremendous change in the appearance of the country. It must not be forgotten that much coal can be obtained which it does not pay to raise and carry far; but it can be well employed in producers for making gas, or even for directly firing boilers. All this coal could then be utilised. On the other hand, there are the vested interests of the railways, and of the enormous number of people who are directly concerned in the distribution of coal, to contend with, and it is practically certain that the present century will not see any great development of this system of saving the transport of coal.

It is therefore very evident that, in spite of all the enormous advances that have taken place in connection with coal-mining, the future still offers a wide field for improvement. The collier has been raised from a state of semi-barbarism to the rank of a respectable member of society. No longer does he live with his family in a single-roomed cottage, as was too often the case before the middle of the century. It would not now be possible to find such a cottage, furnished only with two lumps of coal and a plank for a family of several people, or one in which fourteen young men lodgers were "taken in and done for." Of course such cases were exceptional even in those early days, which had raised such a man as George Stephenson from the ranks of the collier to the pinnacle of fame. Now a mining village is on the whole as sanitary and respectable as could be expected; it often, indeed, wants the leaven of some of the better educated classes of people, but a colliery district is frequently far from beautiful, and unattractive to ordinary residents. In many instances row after row of cottages, with all the latest improvements, has been built for special collieries. This is especially noticeable abroad in Belgium.

All these improvements in mining have increased both the safety and efficiency of colliers to a remarkable degree, as is shown by the following table *:—

Decade ending	Death-Rate per 1000 Workers.	Death-Rate per Million Tons of Coal raised.	Tons of Coal raised per Man employed.
1860 . .	3.38	13.900	280
1870 . .	2.89	10.700	308
1880 . .	1.92	7.420	366
1890 . .	1.85	5.654	380

* In the year 1895 the death-rate per 1000 workers was 1.635, and the death-rate per million tons of coal raised was 5.165.

Much of this increased safety is due to the careful system of inspection that is now in operation as the result of constant legislation since 1850, when the first inspectors of mines were appointed. At the beginning of the century wages for underground workers ranged from 1s. 6d. to 3s. 6d. a day, or averaged about 16s. a week. Now they range from £1, 7s. to £1, 15s. a week, being some 6s. a day with additions, and often the men only work 3½ to 5 days per week.

As far as can be ascertained, the production of coal in this country is approximately disposed of as follows:—

	Per Cent.
Production of steam-power, including collieries	30.30
Manufacture of pig iron and metallurgy	17.26
Navigation, including the Royal Navy	8.66
Railways, including fixed engines	3.98
Waterworks and miscellaneous	1.40
Gas manufacture	5.87
Domestic use	17.44
Export	15.09
	100.00

Domestic purposes and iron manufactures, including metallurgy generally, each use somewhat over 17 per cent., so that a consideration of our iron manufactures—one of our greatest industries—will not be out of place. A word or two must, however, be first devoted to the source of iron—to the iron ores of this and other countries.

Iron Ore Mining.

Coal-mining has been dealt with more fully, because the material itself, occurring in regularly stratified deposits, has afforded a greater scope to the mining and mechanical engineer for systematic treatment. Much of what has been said is nevertheless applicable to the mining of other minerals, and particularly to the enormous deposits of iron ore now being worked. The history of iron ore mining in this country closely follows that of coal in the improvement of mechanical arrangements and of the conditions of labour.

More interest is to be found in the development of the various iron ore producing districts of the world, a change so intimately bound up with the development of railways, and the invention of the hot blast for blast-furnaces, and the discovery of the Bessemer and other steel processes.

Great Britain has excelled all other countries in the production of coal, and similarly she has taken the leading place with regard to the out-turn of iron ore. The statistics for 1895

will, however, probably show that the United States have outstripped us in the matter of iron ore, just as they have done in that of pig iron. The following table shows the production of iron ore in the leading countries, according to a recent report by Dr. C. Le Neve Foster :—

	Tons.
Great Britain and Ireland (1894)	12,565,773
United States (1894)	12,047,307
Germany (1894)	8,433,784
Spain (1894)	5,397,419
France (1893)	3,517,438
Russia (1892)	2,044,062
Sweden (1894)	1,927,212

The most productive European districts at the present time are to be found in Cleveland, Cumberland, and North Lancashire, German and French Lorraine, Luxemburg, and Bilbao. All these, however, are far surpassed by the enormous deposits of the Lake Superior district. About the beginning of the century the clay-band and the blackband ores of the Carboniferous system were discovered in Scotland, and gave a wonderful impetus to the iron trade. These are unfortunately depleted, and the famous Scotch pig is mostly made from other ores. Now the Cleveland deposits are the most important, and produce practically half the British total, an amount that, though large, is totally inadequate to our requirements, so that we import large quantities of the pure Spanish ores, and also considerable quantities from Algeria, Sweden, and elsewhere. Practically all the ores produced in Central Europe are consumed locally, together with imported ores. Sweden during the last few years has rapidly been advancing owing to the development of northern deposits, which cover such large areas. That country has always been famed for its excellent iron, and this is due to the great purity of its ores, which often contain no phosphorus. On this account the Bessemer process was an immediate success there, although it was not possible to apply it in other countries for some few years after its discovery.

The most remarkable development has, however, taken place in the Lake Superior district, where within the last few years no less than five huge deposits of iron ore have been opened up. These are known as the Marquette, Menominee, Gogebic, Vermilion, and Mesabi ranges, and the last, though the youngest, bids fair to far outstrip the others. Here the ore exists as vast masses covered with a few feet of earth, and in many cases it is only necessary to dig it out with a steam-shovel.

The cost of production at the larger mines in the Marquette

and Menominee ranges averages 7s. 6d. per ton; in the Gogebic and Vermilion ranges it is somewhat less. This amount includes a royalty of 1s. 3d. to 1s. 6d. per ton to the owner of the ground. The cost of production in the Mesabi range, inclusive of royalty, is 5s. to 5s. 6d. per ton; the cost of stripping and mining with the steam-shovel being 2s. 6d. to 3s. per ton.

A question of special interest in these districts is that of the ownership of the land. All the Mesabi lands came first into private hands in two ways—either by the operation of the homestead and pre-emption laws, or by the comparatively new law of Minnesota that permits mining companies to lease tracts for purposes of exploration by the payment of a small annual sum during a period not exceeding five years, and the additional payment of a royalty of 25 cents, or 1s. 2½d., a ton on the output of all mines found on these leased lands. Years ago the land in the district was very largely bought for its timber at prices as low as 10s. to 20s. an acre. Many of the original holders sold the land outright, only reserving the timber when exploration began, but others retained the land and charge a royalty. The State of Minnesota owns several of the mines.

There are many other districts in America that can produce all the ore that they require. The Southern States are specially rich, and Birmingham, in Alabama, has a wonderful future predicted for it. In fact, our American cousins say that they can even export pig iron made in that district and sell it in England cheaper than we can make it. If this is likely to be true, it will behove the Cleveland miners to take care what they do. Years ago, in that district, when all the bore-holes were made by hand with jumpers, each man could only produce 4 to 6 tons per shift. With the hand and ratchet drill this was increased to 7 tons, but on the introduction of the power-drill no less than 100 to 150 tons could be obtained. Besides the question of replacing labour that arose on this account, another curious point is involved. The blast-furnace managers now complain that the lumps of ore obtained with the power-drill are too large.

Of the future of the iron ore industry it is almost unnecessary to speak. The known supplies of ore are so vast that they will not be exhausted for many a long year, and it is not to be doubted that undiscovered deposits await us.

The Manufacture of Iron.

We now come to the manufacture of iron, and here again, as with coal, Great Britain is pre-eminent, not only because her production of pig iron until last year was greater than that of any

other country, but also because all the great improvements in this industry have had their foundations laid in this country. In 1894 the production of pig iron in the United Kingdom was 7,427,342 tons, valued at £17,082,887. In the United States it was less than that amount by three quarters of a million tons, but in 1895 it surpassed nine millions. Germany followed with about five and a quarter, France with two, and Russia with one and one-eighth million tons towards the world's total make of some twenty-five millions of tons. At the beginning of the century the production of pig iron in this country only amounted to 200,000 tons, whilst in 1850 it was about two million tons, and the increase has permitted the development of railways, of steel ships, and the replacement of wood and stone by iron and steel in every direction.

The first great development in the manufacture of pig iron is due to Scotland, where the hot blast was invented by Mr. J. B. Neilson, and first applied at the Clyde Iron Works in 1829. At the beginning of the century a blast-furnace that made 30 tons per week was a large size, but at the present day an ordinary out-turn is no less than a hundred tons daily, and in America furnaces are made to smelt 350 and more tons in the twenty-four hours. During the first twenty years of the century improvements were certainly taking place, but they were entirely overshadowed by the great reduction in the consumption of fuel that followed this invention, which simply consists in heating the air that is blown into the furnace to support the combustion of the fuel. The conditions that existed are well shown by Mr. W. Buchanan, who has made the following statement:—"From the memoranda of Mr. Colin Dunlop, one of the partners, it appeared that the actual make of pig iron in the year 1811 at Clyde Iron Works was 2447 tons; coal used per ton of pig iron produced, 10 tons 18 cwts.; and the cost per ton of pig iron, £8. In the year 1812 the make rather subsided a little; it fell to 1735 tons for the year, while the coal consumpt was 10 tons 17 cwts., and the cost of pig iron per ton was £7, 18s. Dropping down sixteen years, to the year 1828, they found what progress had been made, for in that year they made 5884 tons of pig iron, while the coal consumpt per ton of pig iron produced was 8 tons 2 cwts. 3 qrs., and the cost of the pig iron per ton was £4, 12s. 1d., which showed a considerable progress even without the hot blast. In the year 1831, when the hot blast was in its tentative stage, they made 8795 tons of pig iron, and the coal consumpt dropped to 4 tons 3 cwts. per ton of pig iron produced, the cost per ton of pig iron produced being £3, 5s. 6d. In 1832, when the hot blast was in full operation, heating

the air to 600 or 700 degrees, the production had risen to 11,924 tons for the year, while the coal consumpt was reduced to 2 tons 12 cwts., and the cost of pig iron per ton produced was £2, 12s. 8d.; the saving of fuel from the highest point being therefore 8 tons 6 cwts., and the reduction in the cost per ton of pig iron produced, £5, 7s. 4d." The first apparatus was used at these works in 1829, and after its success it rapidly spread over Scotland and, about 1833, to England also. At first the air was heated by passing it through iron pipes heated by a separate fire, and it was not for many years that the waste heat from the blast-furnace was used. Until ten years later than the middle of the century all blast-furnaces were a marvellous sight at night-time, owing to the flame from the escaping gas at the top. Now there is scarcely a furnace left that is so wasteful as to lose half or more of the value of its fuel in this manner. The top of the furnace is closed by a bell, which is only opened to allow the ore and fuel to fall in, but at other times it is kept closed and the gas is taken off and burnt in the stoves for heating the blast. Iron stoves are now almost a thing of the past. They are replaced by Cowper or Whitwell or some similar stoves, which consist of huge chambers 60 feet high and 25 feet in diameter or more, filled with chequer-work or channels of firebrick. The burning gas heats the bricks, and then air is blown through in the reverse direction to recapture the heat. Now the blast is heated to as high as 1500° Fahr., and the consumption of fuel may be taken at an average of a ton of coke per ton of pig iron. Under favourable circumstances it falls as low as 18 cwts., and many blast-furnace managers hope to see it still less. The cost of producing a ton of pig iron to-day, as against £8 in 1811, is 35s. for Cleveland, 44s. Cumberland, and 39s. to 40s. for basic pig.

The size of the furnace has naturally increased in order to produce such amounts as are ordinarily the case at the present day, but not in proportion to the production, since very variable amounts can be produced by blowing more or less air in, so as to work the furnace quickly or slowly. On these points the Americans differ very greatly from the practice in this country, with the result that they produce much more in the day, but their furnaces last a proportionately shorter time. The relative economy of these methods has been vigorously discussed, but no decided settlement has been arrived at, although English practice now tends to follow quicker methods of work. Blast-furnaces in the important smelting districts are now built from 75 to 85 feet high, the excessive heights that were attempted a few years ago, especially in the Cleveland district, having been temporarily abandoned.

With these enormous furnaces in such numbers, it is no wonder that pig iron can be sold at £2 per ton, more or less, according to quality. The days are gone by when a blast-furnace owner could run a small furnace and mill for eighteen months on ten dollars in Pennsylvania by taking the products down the Ohio, bartering them for whisky and rum, which in turn were exchanged at New Orleans for sugar and molasses. These were shipped at Baltimore and turned into groceries and dry goods, which were carried back by waggons to the furnace.

More than half of this pig iron is used for steel-making, a smaller amount for the manufacture of wrought iron, and the remainder for castings. But steel is now so cheap and so much stronger than cast iron that the latter material is steadily being ousted. Cast iron girders have given way to rolled H and other sections, cast pipe is being replaced by wrought metal, riveted or welded pipe, both of small and large sizes, and so on, until it looks as if cast iron will never be used except where mere weight is required. Even for small castings, which can be made so cheaply, there would seem, according to an American author, to be a vanishing field, for bright steel strip or rod can be purchased so cheaply, and is so true to gauge, that it is steadily replacing iron. Small castings, weighing as little as 100 to 150 to the lb., in the form of wheels for toys, to quote an instance, are made of wonderful finish and perfection. All this work is hand-moulded by boys, who will put up flasks for 1200 to 1400 pieces per day at the rate of 3s. to 4s. In the time of high prices these castings were made for 5½d. per lb., but the utmost endeavour will not bring much below 1⅛d. per lb. such small castings as are used for locks, castors, &c. There is some loss of material, and the labour is more skilled than that required for feeding a press, so that it is doubtful whether cast iron can compete. In cost of plant even there is not much in favour of the casting, as the mould must be renewed for each piece, whilst a single die is turning out thousands. In extreme cases a moulder may turn out 7000 to 10,000 pieces while a machine-hand might turn out 90,000, and when automatic feeds are employed the number becomes enormous. Nor need the press operations be simple in their results, and the weight limit of complicated pieces that may be produced without heating the metal before stamping will certainly increase in the near future.

With this future for steel let us trace shortly the steel industry:—

The Manufacture of Steel

The middle of last century saw the invention of crucible steel by Benjamin Huntsman. Before that date steel was not melted and cast, and consequently it had great lack of uniformity. The general process was to embed bars of wrought iron in charcoal, and then to heat them to a high temperature, so that they took up the necessary amount of carbon. These bars were then melted with great expenditure of fuel, and in consequence up to the date of Bessemer's invention the price of steel, which was some £60 per ton, prohibited its general use.

In 1856 the world was startled by Sir Henry Bessemer's announcement at the British Association meeting at Cheltenham, that he had succeeded in removing carbon from cast iron, and so making steel by the simple process of blowing air through the molten metal. Sir Henry Bessemer, then Mr. Bessemer, is the youngest son of Mr. Anthony Bessemer, who had been driven from France in the Revolution of 1792. He is a fertile inventor, and has introduced many important improvements into a large number of trades, but of all these his invention of steel-making is by far the most important, and will carry his name to all posterity. It was in connection with some trials of projectiles for cannon that he first saw the necessity for an improvement in the metal of which the guns were made, and accordingly he set up some experimental works at St. Pancras to elucidate the problem, with the result mentioned above. The process was at once taken up all over the country, and, to the astonishment of every one, immediately proved to be an unqualified failure, although there was no question that the first experiments were an absolute success. At that time very little was known of the chemistry of iron, but the inventor was assured of ultimate success, and adhered to his method. It was soon found that the pig iron he had been in the habit of using was free from that deleterious element phosphorus, whilst nearly all other attempts to use his method were made with iron containing that substance in considerable proportion. It was therefore necessary to choose the metal very carefully to make the process absolutely successful. In 1859, owing to the improvements that had been effected and the knowledge that had been gained, the inventor felt that this had at last been accomplished.

It is a marvellous sight to see this process at work. Ten tons of molten iron, often brought straight from the blast-furnace, are poured into a huge vessel, which is then turned up vertically. Sir Henry Bessemer thus described it:—"The

process is in an instant brought into full activity, and small though powerful jets of air spring upwards through the fluid mass. The air, expanding in volume, divides itself into globules or bursts violently upwards, carrying with it some hundredweights of fluid metal, which again falls into the fluid mass below. Every part of the apparatus trembles under the violent agitation thus produced; a roaring flame rushes from the mouth of the vessel, and as the process advances it changes its violet colour to orange, and finally to a voluminous pure white flame." No coal is required to heat the metal; the simple burning out of the carbon contained in the iron generates enough heat to keep the resulting steel liquid, and the conversion is completed in about twenty minutes.

During the twenty-one years that elapsed after the process was first successfully worked no less than 25,000,000 tons were made, and the saving, compared with the old process, at £40 per ton, was about £1,000,000,000; but it must be remembered that this quantity of crucible steel could never have been made. In 1882 the world's production was over 4,000,000 tons, more than 100 works had adopted it, and over 3300 converters had been erected. When his patent expired in 1870 Sir Henry Bessemer had received £1,057,748 in royalties, besides very large profits from the works that he had started in Sheffield.

His invention reduced the market price of steel railway tires from £60 to £50 per ton, and such tires are now made by the same process and the same machinery, and sold at £8 per ton.

This is not a technical essay on steel manufacture, but it is necessary to refer shortly to other processes which have been evolved during the last thirty years. Sir William Siemens, who, together with the rest of his illustrious family, has made so many advances in the electrical world, succeeded in saving the heat that formerly went to waste up the chimney of a furnace. This he utilised for preheating the air and gas supply, and so was enabled to produce exceedingly high temperatures with a much smaller expenditure of fuel. About 1867 his furnaces were successfully used for making steel by melting pig iron and adding iron ore to it. This was the second cheap way of making steel, but there was still a great invention to be made. As we have seen above, Bessemer had failed at first because of that impurity, phosphorus. As yet ores containing this material could not be used for steel-making, and this induced Sydney Gilchrist Thomas and his associates to come to the rescue with the proposals to use a basic lining of

limestone instead of a siliceous or acid one, and to add plenty of lime at the beginning of the "blow." Success attended their ideas, and from 1879 practically all the iron ores of the world could be used. Steel made by this method is known as basic steel, and the total production up to the end of 1891 was nearly 16½ million tons. The profits of the English patents to the patentees amounted to £128,000. Incidental to the process is the production of slag containing the phosphorus, and this forms a valuable manure. In fact, what was at one time a by-product threatens to relegate steel to a secondary position at basic steel works.

In the production Germany and Luxemburg were always far ahead of all other makers of basic steel, their out-turn often doubling that of the total make in all the other countries combined; *i.e.*, England, Austria, France, Belgium, and the United States. The latter country, however, is bound to adopt the process on an extensive scale sooner or later to satisfactorily utilise the vast deposits of non-Bessemer ore in the Lake Superior districts and in the Southern States of the Union.

At the present time Bessemer and open-hearth, acid and basic processes are working harmoniously side by side. The acid processes can only treat pig iron produced from ores containing comparatively little phosphorus, so that the raw material is somewhat more scarce and expensive. On the other hand, the cost of the lining and other matters is more expensive for basic processes. Then, again, Bessemer converters treat the metal more quickly than open-hearth furnaces, but the range of grade of the steel is somewhat more limited and its quality is perhaps rather more uncertain than the open-hearth metal. The main point is, that all the processes successfully produce steel at cheap rates and in abundant quantity. Even if invention and progress stopped now there would be little to grumble at, but as a matter of fact improvements are being made daily, and one of the most recent that may be mentioned are two processes for eliminating sulphur from the metal. These are the Saniter and the Hoerde processes, one using calcium chloride and the other manganese.

Within the last few years the supremacy of ordinary or carbon steel has been threatened by some of its alloys, notably those with nickel, and to a less extent by those with manganese.

Nickel steel is now largely in use in America, especially for purposes where high tensile strength is important. The alloy contains about 3½ per cent. of nickel, and costs about £7 per ton. At present the largest use is for armour plates, which are rolled up to 4 or 5 inches in thickness, and weighing 25

tons. Thicker plates are made with a powerful hydraulic-press, with a plunger 6 feet in diameter, and working at a pressure of 8000 lbs. per square inch. All these plates are treated by the Harvey process, which produces a very hard face an inch or more in depth. The cost of this metal is high compared with that of mild steel, but its greater strength enables structures to be built with lighter sections, so that it will find a more extended use. Already it has been used for making boilers and shafting. A metal which has a tensile strength of 40 tons and an elastic limit of 30 tons per square inch, together with an elongation of 22 per cent. on 8 inches and a 52 per cent. reduction of area, is a most remarkable material, and yet it can readily be made. A bar of ordinary mild steel, with corresponding contraction and elongation at rupture, will only sustain 30 tons before breaking.

Manganese steel, the other rival, is more suitable for certain purposes where wear-resisting properties are concerned, as it is so extraordinarily tough.

Many people have a vague idea that aluminium will also take the place of steel, or at least will prove a dangerous rival; but this it is not likely to do, although it most undoubtedly has a great future before it, so that a few words on that metal will not, perhaps, be out of place.

Aluminium as a metal is essentially a product of the present century. Although it is exceedingly abundant, yet it is difficult to produce in a pure state, owing to the great affinity it possesses for oxygen. Probably more reckless statements have been made and more frauds perpetrated in connection with the extraction of this metal than with any other matter in the last fifty years. It can indeed be produced cheaply now, and the price per pound is shown in the following table for the last forty years:—

1856 (spring)	£	18	0 0
1856 (autumn)		5	10 0
1878		2	7 6
1887		1	13 0
1888		1	0 0
1889		0	8 6
1895		0	1 6

Sir Humphry Davy, in 1807, first attempted, although unsuccessfully, to prepare the metal, but it was not until St. Claire Deville worked at the subject in 1854 that any large amount of the metal was produced. The first works were built at Rouen in 1855, and what was substantially Deville's process was used for thirty years. In this sodium was used to reduce the double chloride of aluminium and sodium. By

improved processes the price of sodium was reduced, with a corresponding reduction in the price of aluminium. Electric processes, however, became severe competitors from 1885 onwards, and now are the only ones worked. Substantially these consist in reducing a mixture of the aluminium oxide with a flux by the aid of a powerful electric current at a high temperature.

At one time aluminium was hailed as the coming metal, but although its uses are large and varied, yet it cannot fulfil all that was expected of it, and it will not take the place of steel. In the pure state its specific gravity is only 2.6–2.7, as compared with 7.85 of steel, and this excessive lightness renders it particularly available in structures and articles where weight is of importance. Undoubtedly in a pure state it is not appreciably affected by the air, but acids or alkalies easily attack it, as also does sea-water. Owing to its excessive lightness, it is very difficult to free it entirely from slag, so that defects in rolled plates or wire may occur, but by improved processes this defect is now almost eliminated. Its future is undoubtedly to be found in the shape of alloys. All of these are much lighter than the corresponding brasses or similar metals, and they are very strong as a rule. Aluminium bronze, containing 90 per cent. copper to 10 per cent. aluminium, has a tensile strength of 45 to 50 tons per square inch, or is practically as strong as some of the best classes of steel.

When we come to the further treatment of steel, and its manufacture into rods, bars, sheets, and plates, and the further working up of these products into material for railways, ships, bridges, buildings, and all the thousand and one other things to which steel is applied, the field is so enormous that it is almost hopeless to deal with it. At the commencement of the century steel was used for tools, weapons, and machinery; now it is scarcely an exaggeration to say that it is used for almost every purpose. Copper and its alloys, zinc and lead, and a few other metals, certainly total up to half a million tons per year; but what is that compared with twenty-five million tons of iron, of which a half at least is made into steel? When railways were first being constructed it was a difficult matter to find a sufficient number of workmen who were capable of exact work in iron. In the rolling-mill matters proceeded in a very leisurely manner; for instance, in 1840 the make of wire rod for drawing into wire was about four tons per day, whilst now it is 150 tons or more. The rod-rolling capacity of the United States is estimated at about a million tons, and to dispose of this about 200,000 tons each of barbed wire and of wire nails are made yearly, both a product of the last twenty years. To go back a little earlier, the steam-hammer of Nasmyth was a

most wonderful invention. Without it large masses of iron could never be properly worked; but even that grand implement of power must give way to the hydraulic forging-press. One of these is now being built to exert a pressure of 10,000 tons, and under this enormous pressure huge ingots of hot steel will flow like putty into the desired shape. Presses of one and two thousand tons are already in common use, as they work the metal better than the quick jar of the hammer.

Another application of hydraulic power is to riveting, and this has enabled large works to be expedited to a remarkable degree. A portable machine will readily do the work that would require six or seven sets of riveters, and it will put rivets into boiler-shells at the rate of over one a minute, without any of the noise that a lusty hammerman is bound to make. With care in centring the rivet, the work is done with great regularity of finish and excellence. In bridge and girder work, which is not required to be steam-tight, the work can be done more rapidly still, and one man could put in a couple of thousand rivets per day with the machine. One firm has found that 1¼ and 1⅜ inch rivets are closed well at 4s. per 100, as compared with 26s. to 36s. for hand-labour.

Electric power has a still wider field. Already it has been seriously proposed to drive rolling-mills in this way instead of by steam; and in workshops it has been extensively adopted with great advantage, both on the score of economy and for the workman's sake. Leaving out of consideration the substitution of motors for steam-engines in the case of electric transmission of power from a distance, there remain three forms of application of electricity of special interest to the mechanical engineer, namely:—

1. The driving of isolated tools where convenience is a chief consideration.

2. The grouping of a number of machines around a motor admitting of an infinite number of combinations, from that of two or three machines to that of all those on the same floor or in the same shop.

3. The building in of a motor as part and parcel of each and every machine tool.

There are a number of examples in America of the first method, and of the second the installation at Herstal, in Belgium, is representative. Many advantages of this system apply with even greater force to the third system, namely, that of the motor coupled directly to each tool. To these may be added the absence of overhead belting, unobstructed light, and absolute independence of each machine.

On the other hand, by the multiplication of small motors

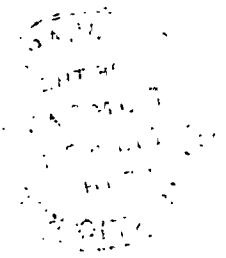
the efficiency will be considerably reduced, and the caretaking increased.

There is still another use to which electricity can be put, and that is electric welding. To show what can be done with this process, let us hear what Sir Frederick Bramwell says. Pieces of round iron bars, 1⅛ inch in diameter, were heated by the electric current and welded by hand. The first heating and the second reheating, together with the time consumed in fixing and unfixing the bars in the machine, took just over a minute, and the weld was completed in two minutes thirty-five seconds. In three hours eighty welds were made with an expenditure of 23½ horse-power for driving the dynamo. A smith and hammerman in the same time only succeeded in making forty-four welds, which were not so good as those made in the machine by less experienced workers. This was in 1890, but since then machines have been constructed so that it is not necessary to take the work out in order to hammer it, and a still greater economy is found. Electric welding thus not only saves time and labour, even on plain and straightforward work, but it also produces more regular and stronger welds, and, in fact, it practically renders the joint equal in strength to the rest of the bar. A further advantage is, that it can be used for metals and for articles of curious shapes which cannot be welded in the ordinary way. There are now some half-dozen processes at work. Some of these use the arc between two carbon poles, like those which constitute an arc light, to heat the metal. In one instance a magnet is placed near this arc to deflect it like the blowpipe frame; other methods are to pass the current between the articles to be joined, as was done in the experiments detailed above. A very curious application of electric welding is to make the joint in a ring, such as a railway wheel tyre. The current does not all flow round the ring of metal, but leaps across the joint and raises it to the requisite temperature.

In this section we have described the enormous development of the coal and iron ore industries, together with the birth and subsequent rise of the age of steel. Without coal but few manufactures can be carried on, and this country has been especially blessed in that direction. Without iron ore our supremacy in the iron and steel trade would not have been possible; but here again we have been favoured by Nature with enormous deposits in Scotland and in the North of England, and these, in conjunction with the closely adjacent coal-measures, have permitted us to outdistance all competitors. Our metallurgical industries, in their turn, have enabled us to develop the construction of railways, of ships, and of

machinery. Our mercantile instincts have encouraged this advance, whilst the progress of ideas has shown that it was only false ideas of economy that limited, in the early part of the century, the exportation of machinery and the emigration of skilled labour. Each of these factors has reacted upon all the others, and in consequence there has been a geometrical progression in arts and sciences, and, best of all, in civilisation.

What has been said of our own country applies, as we have shown in the course of this essay, to neighbouring lands, to the transatlantic states, and, in fact, to every portion of the civilised world.



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MAP III.—THE RAILWAYS AND TELEGRAPHS OF THE WORLD—The Creation of the Nineteenth Century.

The Railways are shown in black.
The Submarine Telegraphs, and Overland Lines that extend beyond the railways, are shown in red.

ESSAY IV

THE PERMANENT WAYS OF TRAVEL AND COMMERCE

A WELL-KNOWN author, Mr. G. R. Porter, writing about 1847, comments upon the admiration expressed by foreigners for the degree of perfection to which inland communication had then been brought in this country. South of Durham there was no spot distant more than fifteen miles from water conveyance by canal, river, or sea, and in most parts not more than ten miles.* At the present day it would be difficult to find a place as far from a railway station. Waterways are not so abundant as they were, but roads have been brought to a pitch of perfection never before attained. In 1829 there were 24,541 miles of turnpike kept more or less in order for the sake of the coaches. Now even a country lane is, as a rule, more or less passable in the worst of weather. Steam-rollers are employed on all main roads to reduce newly laid metal to a state approximating to the surface of a billiard-table; and in the towns, wood and asphalt pavements are almost entirely replacing the old cobbles of which our grandfathers were so proud. The first half of the century saw canals in their prime, and this, the latter half, is the age of railways, with a tendency towards a reversion to canals which are more of the nature of rivers in many parts of the world. In 1809 troops were despatched from London to Liverpool by canal, and arrived "in only seven days." Now the journey is accomplished by rail in four and a half hours. Before dealing with railways, however, let us glance briefly over the history of canals.

Canals have been used from very early times, but locks, which developed their full advantages, do not appear to have been constructed before 1481. Italy was the birthplace of this innovation, and the use spread gradually; but it was not until 1755 that canal construction began in earnest, when the Sankey

* A brief notice of this author will be found in a note to the essay on the Progress of the Working Classes.

Canal Act was obtained. Much, if not most, of the great advance of the next half-century was due to the Duke of Bridgewater and the illustrious engineer Brindley, who died in 1772, after having laid out and been concerned in the construction of 523 miles of canals. In 1790 to 1796 the canal mania occurred, and shares went up to fabulous prices, as did those of railways fifty years later. Many canals were then built, and by the close of the century there were some 1900 miles in existence. During the first fifteen years of this century steady and continued progress was made, but by 1832 canal construction practically ceased. At that date there were—

2323 miles in England.	212 miles in Scotland.
128 miles in Wales.	256 miles in Ireland.

The improvements in roads made by Macadam in 1815 did not very greatly affect their prosperity, but the development of the railways had a most disastrous effect, and this was in many cases increased by the obstinacy of the canal proprietors in their refusal to reduce their rates. In consequence many canals fell into desuetude, weeds and silt choked them up, and they are now almost beyond repair. Railway companies also bought outright many canals, and used them partly in the construction of their own lines, or otherwise closed the navigation altogether. Indeed, the canal owners were most anxious that the railway companies should take over their concerns, so that they might invest the proceeds with their rivals. Of late years increased interest has been devoted to the subject of canal traffic, and, apart from ship canals, much attention has been devoted to inland navigation.

A conference at the Society of Arts was held in May 1888, and the Birmingham district lately has been much agitated. In 1895 a speaker in that town stated that 1264 miles of navigation out of the existing 3520 are railway controlled. In addition 140 have been converted into railways, and 275 miles are derelict or abandoned.

Of inland canals in the United States in 1880 there were 4468.6 miles, costing $214,041,802; but of these 1953.56 are abandoned, and a large portion of the remainder—2515.04—do not pay expenses. Most were made between 1825 and 1840, but only a short length before 1800.

In France at the beginning of the century there were 500 miles of canals, and this was increased by 1250 miles up to 1840. After the advent of the railways, the Government acquired many of the canals for the State. In 1892 there were 7300 miles, whilst their construction is still being carried on and their size increased.

Electricity has come to the aid of many industries, and possibly it may also help canals if it is true, as stated, that an electric cableway system for towing canal boats has passed triumphantly through its preliminary trials on the Erie Canal, and has proved itself a thorough practical success, the motor running on the cables hauling seven heavily laden canal boats at a speed of from 3 to 4 miles an hour. The test section of cableway is 1 mile long, with wooden poles 125 feet apart and 11 feet from the edge of the canal. The upper cable, which carries the motor car, is 1¼ inch diameter, and the lower cable, for the return current, ⅝ inch diameter, the cables being 3 feet 2 inches apart. The car has two sets of gearing, for 3 and 6 miles per hour respectively, and is designed to haul one fully loaded 250-ton canal boat at 6 feet draught in 7 feet of water at 4 miles per hour, or three boats at 3 miles per hour.

Ship canals, in contradistinction to small canals for inland navigation, may practically be said to date from the Suez Canal. This well-known work starts from Port Said and runs nearly due south to Suez, a distance of about 100 miles, through nearly flat and mostly sandy country. Its bottom width is to be over 140 feet, and depth 28 feet; but these dimensions will have to be increased. This canal was due to the genius of Lesseps. It was commenced in 1860 and opened in 1869, and its total cost was about £20,500,000.

Following up this success, Lesseps and the French determined on the Panama Canal, to connect the Atlantic and Pacific Oceans, on which work was commenced in 1882, with the well-known unfortunate results. The work was one of much greater magnitude, as the canal had to be cut through a very hilly and tropical country. The Panama Canal was to be only 46 miles long. Other schemes have been promulgated, and amongst these is the Nicaragua Canal, which is to be 169½ miles long; but of this, 56½ miles will be through a lake 110 feet above sea-level, so that locks will be necessary. It is certain that some day the isthmus will be pierced; whether the present plan, as it is being carried on by American capital, will succeed or not time alone will show, but the last report is not favourable.

There are two canals which convert inland towns into seaports—our own Manchester Ship Canal and the Amsterdam Canal. Strictly speaking, the latter town is on the Zuyder Zee, but navigation is there difficult. Other proposals with regard to Bruges, Paris, Birmingham, and Sheffield are in the air.

The present Amsterdam Canal was commenced in 1865, and

completed in 1876, at a total cost of £2,000,000, allowing for the land reclaimed in its construction. It is about 16½ miles long and 23 feet deep.

The Manchester Ship Canal is, next to the Suez Canal, the most important in the world. Opened at the commencement of 1894, it now allows vessels to pass through the districts lying between Manchester and Liverpool. On its history there is no need to dwell, but it may be said that the enterprise took definite shape in June 1882, a Bill was passed in Parliament authorising its construction in 1885, and two years later work was commenced. The canal has a total length of 35½ miles, with five locks. Its normal depth is 26 feet, but this may in the future be increased by 2 feet. The cross section is larger than that of any existing canal, ranging from 120 to 170 feet in breadth at the bottom. It is crossed by numerous bridges, many of which are movable, and also by the Bridgewater Canal, which is carried across it by a swing aqueduct. The engineering features attached to the work of construction of this canal are of surpassing interest, and are well and succinctly described in a special number issued by *Engineering*, January 26, 1894.

The cost of this huge work has been immense, and the capital that has had to be subscribed in addition to that originally called for is enormous. The total capital now stands at about £15,000,000. The receipts in 1894 amounted to about £90,000.

The Corinth Canal is another important, though comparatively small, work. It was commenced in 1882 and opened in August 1893. It is just under 4 miles long, running straight across the Isthmus of Corinth, and it saves 120 to 180 miles from Adriatic and Mediterranean to Black Sea ports. It has so far been little used, chiefly because the saving in time is not commensurate with the dues charged.

The North Sea Canal is 61⅓ miles long, running from Brunsbüttel to Kiel Harbour across the Danish Peninsula, and was opened with much *éclat* by the German Emperor in 1895. It saves 450 miles' passage round through the dangerous Skager-Rak. The depth is 29½ feet, and width at bottom and top is not less than 72 and 197 feet, so that the largest ships afloat can pass through. The cost was about £8,000,000.

Other canals are proposed between the Baltic and the White Sea: the Bordeaux Canal, to connect the Bay of Biscay and the Mediterranean; the Kertch Canal, between the Sea of Azov and the Gulf of Odessa; a canal across Florida, and others.

Even with ship canals railways are entering into competition,

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for there is one in course of construction to connect the Bay of Fundy and the Gulf of St. Lawrence. This will carry ships up to 2000 tons, will be 12 miles long, and will save 300 miles round Nova Scotia. The ships will be supported in cradles running on two lines of rails 18 feet apart, and will be drawn across by locomotives. Hydraulic lifts at the ends will raise and lower the vessels.

Although roads and canals have had such an influence in the present century, yet the railway industry probably more than any other has enhanced the wealth and fostered the commerce of the world, and has tended to promote international friendship and universal goodwill. At the last International Railway Congress Mr. Bryce summed up the present condition of affairs by saying that in this country they had nearly completed the work of constructing their great trunk lines. The capital invested in English railways was £1,000,000,000—one-sixth of the total of the world. They carried 900,000,000 passengers annually, and 325,000,000 tons of goods. The number of employés was 400,000. The mileage was 21,000, and the total mileage in her Majesty's dominions was 70,000, as against 400,000 throughout the world, one-half of which was in the United States.* In England there was a highly organised service of trains, and some wonderful engineering works. The speed and safety of English railways were unexcelled, and the safety of the workpeople was not neglected. The railway system had changed the condition, the politics, and the trade of the peoples of the world.

At the commencement of the present century railways were of course practically unknown; they are an outcome of the last seventy years as far as their present state is concerned. Wooden and even iron rails were used at an early date to facilitate the traffic of trucks in colliery districts, but the first Act for the construction of a railway was not passed until 1801. This line was from Wandsworth to Croydon, some nine miles, costing £60,000. Before 1823 there were thirty-three Acts for the construction of lines or for the extension of existing Acts and powers; but in that year the Stockton-Darlington line was passed, and all the genius of George Stephenson, the father of railways, was put forth to introduce locomotive traction instead of horse haulage. Then three years later the Manchester and Liverpool Act was passed, and from that date railway construction has steadily progressed. Not only was England busy with the extension of her lines, but all the other civilised countries of the world were at work in the same direction. The United

* A detailed account of the length of railways in the chief countries of the world will be found in the essay on Locomotion.

States, for instance, in 1840 possessed some 3300 miles of railway, which had cost about £6000 per mile.

At first cast-iron rails resting on stone blocks were a frequent type of construction, but wood sleepers and wrought-iron rails speedily replaced all other systems. Wrought iron held its own till about 1870, but by that time steel was steadily replacing it, so that in 1880 no less than sixty-four per cent. of railways were laid with steel rails in this country, and at the present day there is scarcely a mile of track on which steel rails are not used. Two types of rail section are in use. One form, the flange rail with a broad foot resting directly on the sleepers, is used but little in this country, but on the Continent it is largely used, and in America practically no other form is employed. The other form, the double-headed rail, which is supported in chairs, is adhered to in Great Britain. There was a third type, the bridge section, such as was used on the Great Western Railway, but this has practically disappeared, and no other forms have ever found much favour. Many attempts have also been made to construct the rail in two parts, with a renewable head for instance, so that it can be replaced when worn, but up to the present these kinds have scarcely been used. A recent and very successful attempt has been made in America to repair old rails by heating and re-rolling them. They are thus reduced slightly in weight, but their shape is renewed and they are fit for lighter work, and this apparently can be carried on indefinitely, as there is always some call for very light rails.

To ensure greater safety at the higher speeds that now prevail, the size of the rail has been increased, so that on main lines a very common weight is 80 lbs. per yard, and in some instances as much as 100 lbs. per yard have been used, and this too with rails 100 feet long, although the more common length is still 30 feet, or sometimes half as long again. When rails like these are laid down on an extensive scale, it is easy to see how one source of the increased production of steel and coal has arisen.

Wooden sleepers are likely to be replaced to a certain increasing extent by supports made of metal. In India metal sleepers are largely employed; and, excluding America, somewhere about ten per cent. of all the railways are laid with them. Many forms are in use, but there are still a larger number that are unsuitable owing to their numerous and complicated parts.

In railway construction, as in canal construction, more extensive use is made of machinery of all sorts. Especially is this the case in excavating cuttings, where steam-shovels will

do the work of hundreds of men with spades and wheelbarrows. They dig up the earth and load it direct on to the railway trucks, which are then run off to where an embankment is made by emptying them simultaneously by further machinery.

Speeds are constantly increasing. Many trains now run at fifty miles an hour over long distances, and there are schemes in the air for running at a hundred or even more miles in the hour; but it does not seem likely that railways and locomotives, as they are constructed at present, will accomplish such a feat. Between the United States and this country there has recently been a very healthy rivalry in this respect, but the popular idea of a mile a minute is not yet reached, except for comparatively short distances out of lengthy runs. The state of the general railway system brought into existence mainly during the latter half of this century will be appreciated by a reference to the map appended to this essay; and the network that covers this country is practically complete, but there are still many small gaps to fill up, and this may be done by what are termed light railways. Such lines are erected at slight cost, and serve as feeders to the main lines, but there is much discussion as to whether they will pay in small agricultural districts. There is a greater scope for tramways, especially in towns, and in this direction there has been tremendous activity of late years. In this country the development of mechanical traction is far behind that in America and Europe, but cable tramways and electric tramways are bound to replace the horse-lines.

To facilitate internal communication there are two factors of great importance, and these are the construction of bridges and tunnels. The early builders were very proficient in the art, as may be seen by inspecting any of the old Roman aqueducts, but they did not have iron or steel to help them in constructing the huge spans that are now so often a matter of necessity.

Elliptical arches were introduced by John Rennie at the beginning of the century, and cast-iron bridges were also coming into favour. The great impetus to bridge-building was, however, naturally given by railways, which for stone and masonry have generally reverted to the circular arch. For large spans neither stone nor cast iron are suitable, so that wrought iron was introduced for the Menai Straits tubular bridge, with its spans of 400 feet and over. This bridge was opened in 1850. A more useful disposition of the metal in order to save weight and gain strength is to be found in the lattice girder, so that tubular bridges are not likely to be built again. At the pre-

sent time practically all bridges are girder bridges, but the girders vary greatly in form, so that every new bridge almost presents peculiar features. In addition to girder bridges, the suspension type has been largely used, and probably may be so in the future. The two largest bridges in the world are the Forth Bridge and the Brooklyn Suspension Bridge. The Forth Bridge consists of two main spans of 1700 feet, two of 675 feet, and fifteen spans of 168 feet each. Its total length is 8296 feet, and it gives a clear headway of 152 feet for ships at high water. The top of the structure is 360 feet above water-level. One of the cantilevers may fitly be compared with the Eiffel Tower laid on its side as far as size is concerned.

The Brooklyn Bridge may be taken as a fine example of the suspension bridge. Commenced in 1870, it was opened to the public thirteen years afterwards. The river span is 1595½ feet long, and each land span 930 feet. The structure is supported by four wire cables, each containing 5296 parallel steel wires, and altogether weighing over 3500 tons. Over a million passengers have been carried across this bridge in a week on the tramway that crosses it.

The Tower Bridge is the largest bascule bridge that has been built. The spans at the shore ends are 270 feet, and the central span gives a clear space of 200 feet for shipping when the two massive 100 feet long drawbridges are raised. When the freedom of the Turners' Company was presented to Mr. J. Wolfe Barry in November 1895, he said that the average number of vehicles crossing the Tower Bridge daily was 9000, and of pedestrians 30,000. Since the opening of the bridge last year four and a half million vehicles and fifteen million foot passengers had used it. The bascules had been moved 8000 times without the slightest hitch. They were raised on the average sixteen times daily, but on one occasion were lifted thirty-six times. A child could work them, although they weighed more than a thousand tons each. Open on the average six minutes at a time, the greater part of that period was occupied by the passage of ships as distinguished from the raising and lowering of the bascules, the latter operations together lasting only two minutes and a half.

At the beginning of this century, apart from the underground workings of mines, there were several tunnels already in existence for the conveyance of canals through hilly country in order to avoid long detours or an excessive number of locks. The Thames tunnel at the time surpassed all others in magnitude, boldness of design, ingenuity in the means of construction, and the extraordinary difficulties overcome. It was commenced

in 1825 by Brunel, who designed a shield or framing of iron which prevented water or clay breaking into the workings, and this was advanced by screws bearing against the brickwork. When finished this tunnel consisted of two arched openings 1200 feet long, 13¾ by 16⅓ feet in area. It cost £1137 per yard, and was opened to the public in 1843. This tunnel is now used by the East London Railway.

To railways the great development in tunnel construction is due. As a rule it is not economical to make an open cutting more than sixty feet in depth, especially in soft material, unless the spoil is wanted for embankments. This is partly owing to the inclination which has to be given to the sides, which causes the mass to be removed to increase more rapidly than the depth.

As a rule a tunnel is attacked not only at both ends, but also at intermediate points, by means of vertical shafts, so that the work may advance more quickly. In some cases, however, as in the Mont Cenis and St. Gothard tunnels, this is impossible, owing to the depth of the shafts that would be required. In some cases where ground is valuable an open cutting is made, and then the tunnel arching is built and covered over with earth again. Part of the Metropolitan District Railway in London was constructed on a modification of this system. Amongst the chief difficulties in tunnelling are those arising from inrushes of water or of loose ground, such as quicksand, and from the confined space in which working has to proceed. By the use of shields and compressed air much work has been done that would otherwise be impossible, as in the South London Electric Railway, and a careful systematisation of labour enables the work to be driven forward rapidly. The cost of driving tunnels varies enormously, according to the nature of the ground and the difficulties encountered, and it ranges from £10 to £100 per yard in ordinary work. Amongst the many tunnels driven one or two require special mention.

The Mont Cenis tunnel, 7½ miles long, was commenced in 1857, and until 1870 the boring of the blast holes was performed by hand labour. Boring machinery was then introduced, with the immediate result of nearly trebling the speed of advance. Work was carried on from each end, and the meeting was made on Christmas Day 1870. The actual opening for traffic took place about the end of the next year. In the following year work was commenced on the St. Gothard tunnel, which was to be 9¼ miles long, and the junction was made in seven years and five months. The much more rapid completion may be ascribed to improvements in the drills and to better arrangements evolved from the experience gained in

the Mont Cenis tunnel. This tunnel was opened in 1882. The Arlberg tunnel, of 6⅓ miles long, was driven with even greater rapidity and at a less cost, which in the case of these three tunnels was £224, £142, and £108 per yard.

These tunnels were difficult on account of the exceptional hardness of the rocks encountered, but often other difficulties are greater to overcome. The Thames tunnel has been instanced above. Tunnels under the Chicago river in 1867–71 were really constructed in the open air by enclosing the site half across the river at a time. The Severn tunnel was safely completed after an enormous amount of trouble with water. At one time no less than 30,000,000 gallons of water were pumped in the day, or the works would have been flooded, and for a whole year the average quantity was 24,000,000 gallons. The first passenger train passed through July 1, 1887, work having been begun in 1873, but it was not pushed on vigorously until 1880. The tunnel is 7664 yards long.

To facilitate still more the passage through the Alps, the Simplon tunnel, of about ten miles, is now to be constructed. An agreement, subject to ratification by the countries interested, has been drawn up for the construction of the Simplon tunnel. There are to be two parallel single-line tunnels, 18 feet high and 55¾ feet apart, connected at intervals of 220 yards. Only one is at first to be completed to full size, and the other is to be used as an aid in the working. This part, it is estimated, will cost £1,900,000, and will take 5½ years. The completion of the second tunnel will bring up the cost to a total of £2,780,000. The terminal points selected are Brieg, in the Rhone valley, and Domo d'Ossola, on the Italian side. About two-thirds of the whole length will be included in the main tunnel from Brieg to Isello, in the Val de Vedro.

The advantages to mankind accruing from the varied means of intercommunication cursorily described in this essay are more fully dealt with elsewhere, and it is only necessary to say in conclusion that still greater progress would have been made were it not for international jealousies. If there were no such leaders of public opinion (or, more correctly speaking, of certain phases of public feeling) as Commanders-in-Chief and Secretaries of War, it is more than probable that a tunnel would ere this have joined England and France, not only physically, but in bonds of international friendship. Let us hope that the time is not far distant when such an undertaking will be added to man's conquests over Nature.

ESSAY V

LOCOMOTION ON SEA AND LAND

It is almost impossible to overestimate the value of improved locomotion as a national, or, indeed, as a universal, agency of civilisation. In facilitating the interchange of the necessaries and luxuries of life between nations it adds to the comfort and prosperity of all; in promoting emigration it relieves congestion in overpopulated lands, and places colonists in parts of the world where the hand of man alone is needed to make "the desert blossom as the rose;" in the transport of mails (a subject which is fully treated elsewhere in these pages) it keeps up the association between far-distant races, or between members of the same family. It serves to cultivate modern eclecticism by exhibiting to different nationalities each other's excellent qualities and customs, and their various achievements in Art and Industry, whilst it lays bare their defects and imperfections to healthy criticism. The travelled man is rarely a bigot. He is usually emancipated from the narrow prejudices of those who stay at home and limit their observations to their immediate surroundings. So we are justified in saying that the rapid strides which have been made during the present century in the means of locomotion for men and merchandise constitute one of the most trustworthy, if not the most trustworthy, index to the general progress of civilisation.

Nor is the consideration of the changes which have taken place any less interesting than it is important. Witness, for example, the transition from the sailing-ship, at the mercy of every passing gale, to the leviathan propelled by steam and conveying across the ocean in safety, and with almost unerring speed and punctuality, whole communities who in former days would have sufficed to people a town of considerable proportions; or from the old stage-coach, running at its best twelve miles an hour, its passengers liable to the attacks of highwaymen, and subjected to the discomforts of bad inns, to the perfected arrangements of a modern *train-de-luxe*, with its terminal palatial accommodation for travellers. To follow the stages which have led from one to the other would be found deeply interesting, but

all that can be attempted here will be to contrast what were already in a sense the improved means of locomotion during the earlier years of this century with those of the present day.

The modern era of locomotion both at sea and on land may be said to date from about the third or fourth decade of the present century; that is to say, from about 1829, when Stephenson's *Rocket* commenced running on the Liverpool and Manchester Railway, and about the year 1838, when the *Sirius* made her first trip across the Atlantic, propelled solely by steam.

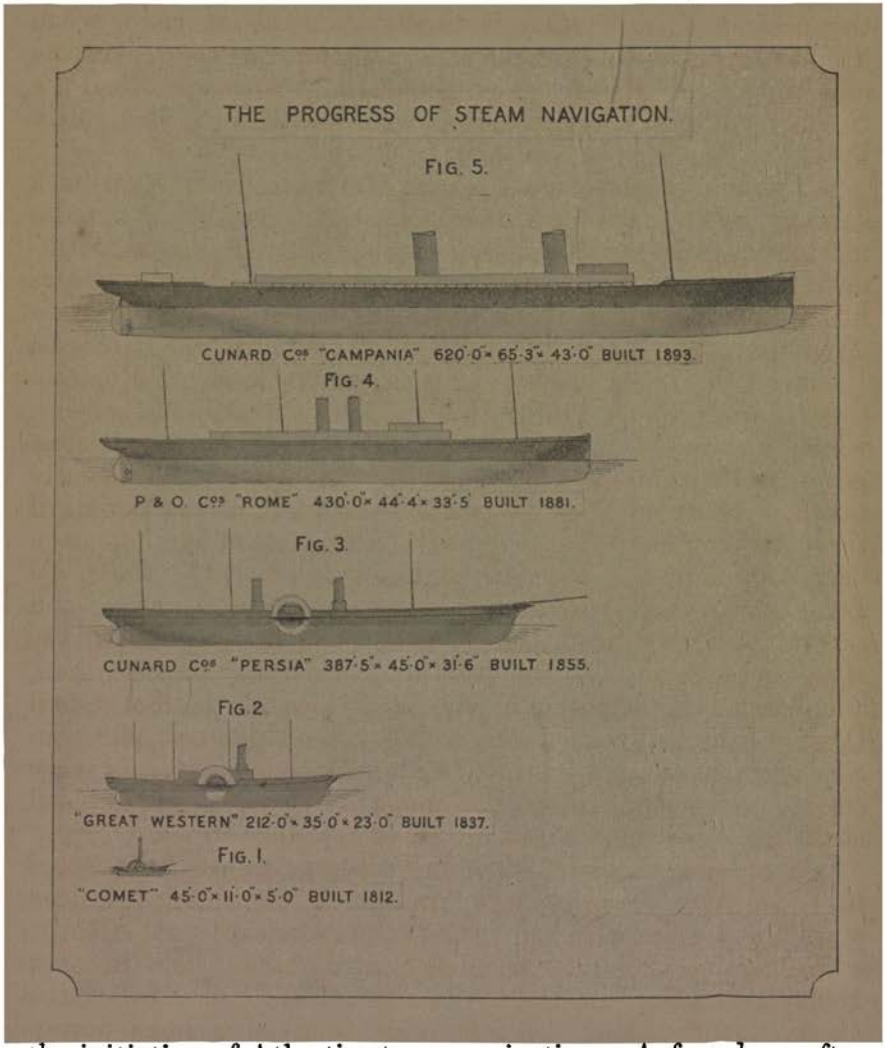
Attempts to propel vessels by steam were made as far back as 1543, when a Spaniard, Don Blasco de Garray, "invented a machine moved by steam, and capable of propelling ships independently of oars or sails." The apparatus referred to "was fitted to a vessel of about 200 tons, called *La Santissima Trinidada*, and an experiment was conducted in Barcelona Roads on the 17th June 1543, in the presence of the Empero Charles V., his son Philip II., and many illustrious persons, which resulted in the ship's attaining a speed of one league per hour."* Patents for steam propulsion were subsequently taken out both in England and America, but it was not until the commencement of the present century that the invention began to assume a practical shape. In 1802 the *Charlotte Dundas*, having on board the owner, Lord Dundas, and several of his friends, took in tow "two loaded vessels, the *Active* and *Euphemia*, each upwards of seventy tons burthen, and carried them through the long reach of the Forth and Clyde Canal to Port Dundas, a distance of nineteen miles, in six hours; although during the whole time it blew a very strong breeze right ahead, so much so that no other vessel could move to windward in the canal that day."†

A league an hour in 1543, and nineteen miles in six hours in 1802—the "record" still "unbroken"! In 1807 Fulton started a steamer which plied between New York and Albany, a distance of 146 miles, in about thirty hours; and in 1812 Henry Bell placed on the Clyde a small steamboat called the *Comet*, 45 feet long, 11 feet beam, and of 4 horse-power. (See Plate, fig. 1.) In 1816 steamers commenced to ply between Holyhead and Dublin, the first two being the *Britannia* and *Hibernia*, sister ships, of 107 tons and 20 horse-power; and then steam navigation began to extend to various Continental states. The passage to India is referred

* Essay on Steam Navigation, by M. Samuelson, *Quarterly Journal of Science*, April 1864, quotations from a MS. in the archives of Salamanca.

† *Ibid.*

to in another essay,* and after two vessels had crossed the Atlantic, *partially* propelled by steam, the first real passage, referred to above, was made (1838) by the *Sirius*, 708 tons and 320 horse-power, from Cork to New York in nineteen days. To-day the same passage, as we shall hear presently, is made in little more than a fourth of that time, but this was


THE PROGRESS OF STEAM NAVIGATION.
FIG. 5.
CUNARD Cº "CAMPANIA" 620·0 × 65·3 × 43·0 BUILT 1893.
FIG. 4.
P & O. Cº "ROME" 430·0 × 44·4 × 33·5 BUILT 1881.
FIG. 3.
CUNARD Cº "PERSIA" 387·5 × 45·0 × 31·6 BUILT 1855.
FIG. 2.
"GREAT WESTERN" 212·0 × 35·0 × 23·0 BUILT 1837.
FIG. 1.
"COMET" 45·0 × 11·0 × 5·0 BUILT 1812.

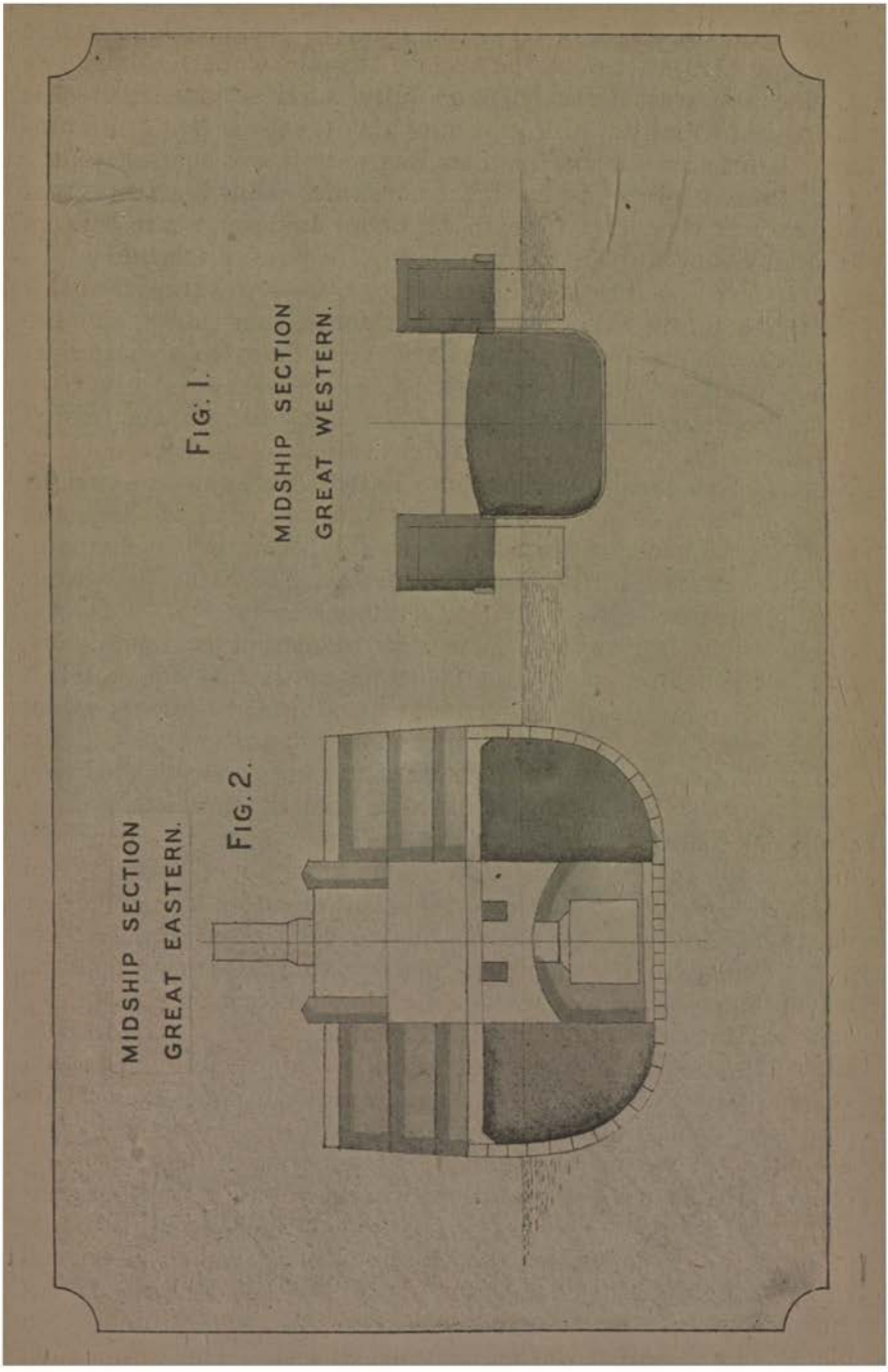
the initiation of Atlantic steam navigation. A few days after the departure of the *Sirius*, another steamer, the *Great Western*, whose name is better known to the general public, left Bristol on the same voyage, which she compassed in fifteen days and ten hours, arriving in New York shortly after the *Sirius*. The *Great Western* was 1378 tons (gross), 212 feet

* On Postal Communication. "The first steamer with mails for Egypt and India was despatched from Falmouth on March 1, 1835."

long, 35 feet beam, her indicated horse-power being 1260, with a daily consumption of about thirty-six tons of coal per day. (See Plate, fig. 2.) And now, to make a long stride down to the present day, let us add that the Cunard Company's *Campania*, which will be more fully referred to hereafter, is about ten times the size of the *Great Western*, her gross tonnage being 12,950; her indicated horse-power is nearly twenty-four times as great (30,000), she consumes about fourteen times as much coal per day (about 500 tons), and makes the passage in about one-third of the time required by her predecessor.

Apologising for this digression, we must return for a few moments to the earlier days of ocean travel. Gradually the duration of transit was shortened, and considerable improvements were made in the construction of the boats. Perhaps the most important of those was to be found in the *Royal William*, the first steamer which sailed from Liverpool to New York, namely, the division of the boat into watertight compartments, a mode of construction which has been the salvation of many a steamer after a collision. The company which chartered the *Royal William*, the Transatlantic Steamship Company, also sent, amongst others, the *British Queen*, which made the voyage from Portsmouth in fourteen days, and her unfortunate sister ship the *President*, which was lost on her fourth voyage, having amongst her passengers, all of whom perished, the celebrated Irish actor Power. On the 4th July 1840 the Cunard Company (originally called the British and North American Royal Mail Steam Packet Company) despatched from Liverpool their first steamer, the *Britannia*, and from that time to the present there has been a succession of enterprising companies vying with one another which should place the fastest and most commodious steamers on the berth. Before giving a more detailed description of the travelling conveniences in two of the more recent "greyhounds" of the Atlantic, we should like, however, to draw attention to another important improvement in the construction of such vessels, namely, the "cellular double bottom," upon which principle the leviathan steamer, the *Great Eastern*, was designed by Mr. Brunel, and built by Mr. John Scott Russell. (See Plate, fig. 2, in contrast with Plate, fig. 1, the midship section of the *Great Western*.) To show the advantage of this improvement in construction, it may be mentioned that when off Long Island on one of her voyages the *Great Eastern* passed over some rocks, tearing her bottom in ten places, one of which was 80 feet by 10 feet. The duplication and subdivision of her bottom, however, rendered this only a local injury, and the passengers were landed without being

aware of its extent. Had she not been built on this principle,



it is highly probable that they would have arrived in another world instead of at New York. As the *Great Eastern* was a

historical vessel, a few words more concerning her may be of interest. She was in reality 80 feet longer, 17 feet broader, and 17 feet deeper than the *Campania;* her gross measurement exceeded that of the latter by 6000 tons; she was constructed to carry 4000 passengers of three classes, against 1500 by the *Campania;* but the indicated horse-power of her screw and paddles was only 8000, against 30,000 of the twin screws of the *Campania,* which propel that steamer at the rate of 21 to 22 knots an hour, against 14 to 14½ knots of the *Great Eastern.* As a passenger steamer the *Great Eastern* was a failure, but to her is due the credit of having laid the Atlantic and other submarine cables, and her failure even has been of immense advantage to shipbuilders in exposing defects of construction, which have been remedied in succeeding steamers. One drawback, an insurmountable one in her day, was that there was no dry or wet dock of sufficiently large proportions to admit her, and no convenient nor effective means of repair.

As we have already said, it would be impossible here to follow the stages of improvement in steam navigation, or even to enumerate the enterprising builders and owners of lines of steamers, whilst to select any for special commendation would be an invidious task. A glance at the plate containing profiles of three of the steamers already named, along with two others of intermediate proportions, the Cunard Company's well-known boat the *Persia* (Plate, fig. 3) and the *Rome* (Plate, fig. 4), one of the Peninsular and Oriental Company's fleet, must suffice to give the reader some notion of the strides which have been made in steam navigation during the century. That shortcoming is, however, not of much moment in this essay, which is in no sense a technical one, its object being to exhibit the effects of modern appliances for the convenience of travel and intercourse, rather than to narrate the steps by which the present stage has been attained.

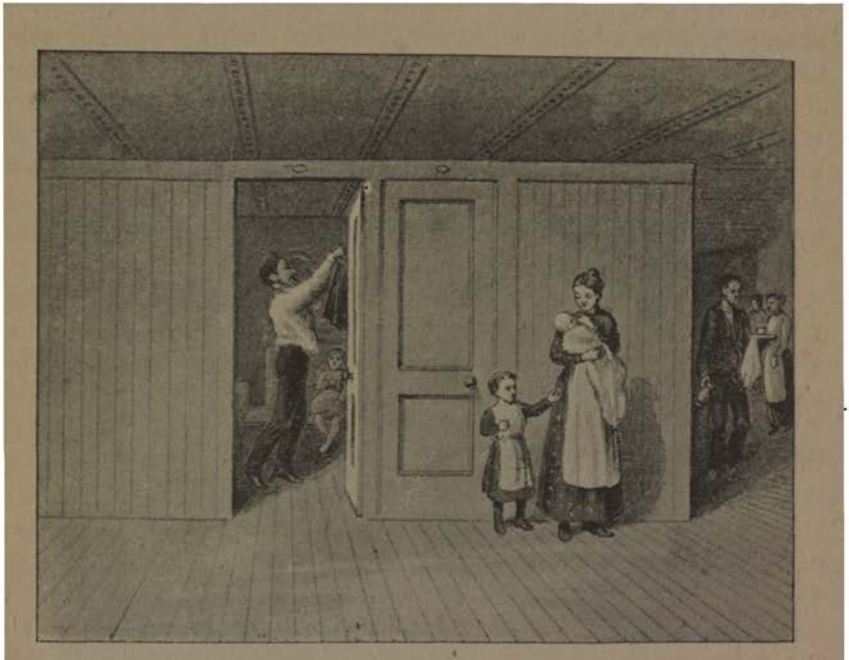
To this end we purpose giving what must, after all, be but a superficial description of the accommodation provided for passengers, more especially for emigrants and the less affluent travellers, in two of the most-noted Atlantic boats, the *Campania* (Plate, fig. 5) and the *Majestic,* and to add a few words concerning steamers specially constructed for traffic to or in parts of the world where the conditions of climate have to be carefully considered. So far as the accommodation for persons of ample means is concerned, the *Campania,* belonging to the Cunard Company, is a floating palace, and her drawing-room for passengers of the first class would be admired if it were found in any mansion in the country. It is situated

on the promenade-deck, has four entrances, and is a lofty saloon, well lighted and ventilated. The ornamentation is in the style of the Renaissance, the walls being of satinwood and cedar, enriched with beautiful carved work. No one, to look at the beautiful mantelpiece and fire-grate, would believe that he was on board a steamer, and the illusion is completed by a Collard grand piano of satinwood and an organ of white wood, with gilded pipes rising up to the frieze. We have endeavoured to get a glimpse of this part of the drawing-room, but it conveys a very imperfect idea of the original.

In the Saloon of the "Campania."

When it is added that the dining-room, capable of seating 430 passengers; the library, with exquisitely bound volumes and comfortable arrangements for reading and writing; and all the other conveniences for first-class passengers, are on a par with the drawing-room, we have said all that can be said concerning the first-class accommodation of this remarkable steamer. The second-class accommodation is also excellent—fully equal, in fact, to that of the first-class in many good sea-going boats; and what with the electric lights throughout the boat, and its perfect ventilating appliances, everything has been done to mitigate the discomforts of ocean travel.

Whilst there is perhaps not such an amount of luxury and display about the *Majestic*, owned by the White Star Line, there appears to be more uniformity in the attention paid to the comfort and convenience of all classes of passengers, from the prince or ambassador (crowned heads don't seem to venture across the Atlantic) to the Scandinavian peasant emigrating with his family from the Old to the New World in search of a home where his labour shall be better rewarded than upon the barren soil of his fatherland. And well they deserve all the



MARRIED QUARTERS, STEERAGE OF THE "MAJESTIC."

attention and encouragement that can be given to them, those handsome, fair-haired, sober and industrious children of the land of the midnight sun! On board the *Majestic* they must be astonished at their surroundings. The least attractive of the sleeping-berths is equal, if not superior, to the first-class berths which were until recently, and are perhaps still, to be found in the passenger boats plying on the Danube. The steerage accommodation of the *Majestic*, which is lighted throughout by electricity, is divided into three sections, namely, the compartment for single men, situated in the fore part of the vessel, that for single women aft, and amidships the rooms for married couples. On either side of the single men's compartment there are rooms containing from eight to twelve berths, and the inner walls—that is to say, the sides abutting

upon the saloon—consist of sliding ventilating boards or bulkheads, ingeniously constructed so as to promote ventilation, without exposing the berths by day, and closed at night to secure privacy. The quarters of the single women resemble those of the single men, but the married men have real "state-rooms" of homely pretensions, containing either two or four berths, the latter where there is a family. Not only are these quarters lofty and airy, and well warmed in cold weather, but by a special contrivance at one end a stream of ozone is constantly passed through them, so that the air is always kept pure and wholesome. The bathing and all other sanitary arrangements are equally good. As for the regulations for intercourse during the day, all sections of emigrants may mix freely on the decks reserved for them, but after dusk the sexes are separated by lattice gates of iron, which are drawn across the decks so as to divide off the respective quarters. In every other respect, food-supply for healthy or sick, cooking apparatus, pantries, and bedding, such attention is paid to the comfort of the emigrants that we can well imagine their finding the rapid passages of those "greyhounds" all too short, and their leaving the boats not without reluctance for their new, and perhaps unknown destination.

We have referred to the food-supply, and it may be of interest to give the reader some idea of the stores of provisions which are needed for the whole community on board of one of these steamers. With a pretty full complement of passengers of all ranks, namely, 1450, and 424 persons engaged upon the vessel *—in all, therefore, 1974 persons—the consumption of food in the *Campania* during one of her recent voyages was as follows:—Between 13 and 14 tons of beef, mutton, lamb, veal, &c., bacon, hams, chickens, ducks, turkeys, game, and fish; nearly 12 tons of potatoes; 10,460 eggs; about 4 tons of flour; and about 3 tons of sugar, butter, tea, coffee, and cheese. How many gallons of beer, wine, and spirits, besides tea and coffee, were required to wash down this supply of solids we are unable to inform our readers; but a more important inquiry—what would become of this living freight if by some accident the voyage were protracted?—is answered when we are told that there is always a sufficient reserve of provisions to feed the host on board for at least twice the normal passage.

These two "ocean greyhounds," as they are called to-day, with their sister vessels the *Lucania* and *Teutonic*, are typical

* Sailing department 54
Engineers and firemen 190
Steward's department 180

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of the best constructed and furnished ocean-going passenger steamers afloat; but there are others deserving of a passing notice, with special features adapted for tropical climates. Very characteristic are two boats, the *Venus* and the *Edlo*, built in 1886 by Messrs. William Denny & Brothers of Dumbarton for La Platense Flotilla Company, to ply upon the river Plate. They are not large boats, being only about 1750 gross tonnage, but are specially constructed for the region in which they are employed, having two complete decks, promenade and main, a lower deck forward and aft, and a "shade deck" extending from right aft almost up to the bow. There is accommodation

SALOON OF THE RIVER PLATE STEAMER.

for two classes of passengers, and the fittings are beautiful, the most interesting being in the lower saloon, where there is a marble fountain, which is constantly playing to keep the atmosphere cool and pleasant. Plants of different kinds add a charm to the scene, and the various saloons and state-rooms are open to the breeze in every direction, so that passengers find themselves in a lovely garden rather than on board of a steamer. No description conveys an adequate idea of the appearance of these boats, and the accompanying photograph unfortunately fails to show their most attractive feature, namely, the marble fountain; indeed here, as in the case of the Atlantic liners referred to above, a personal inspection is requisite for the full appreciation of these floating palaces.

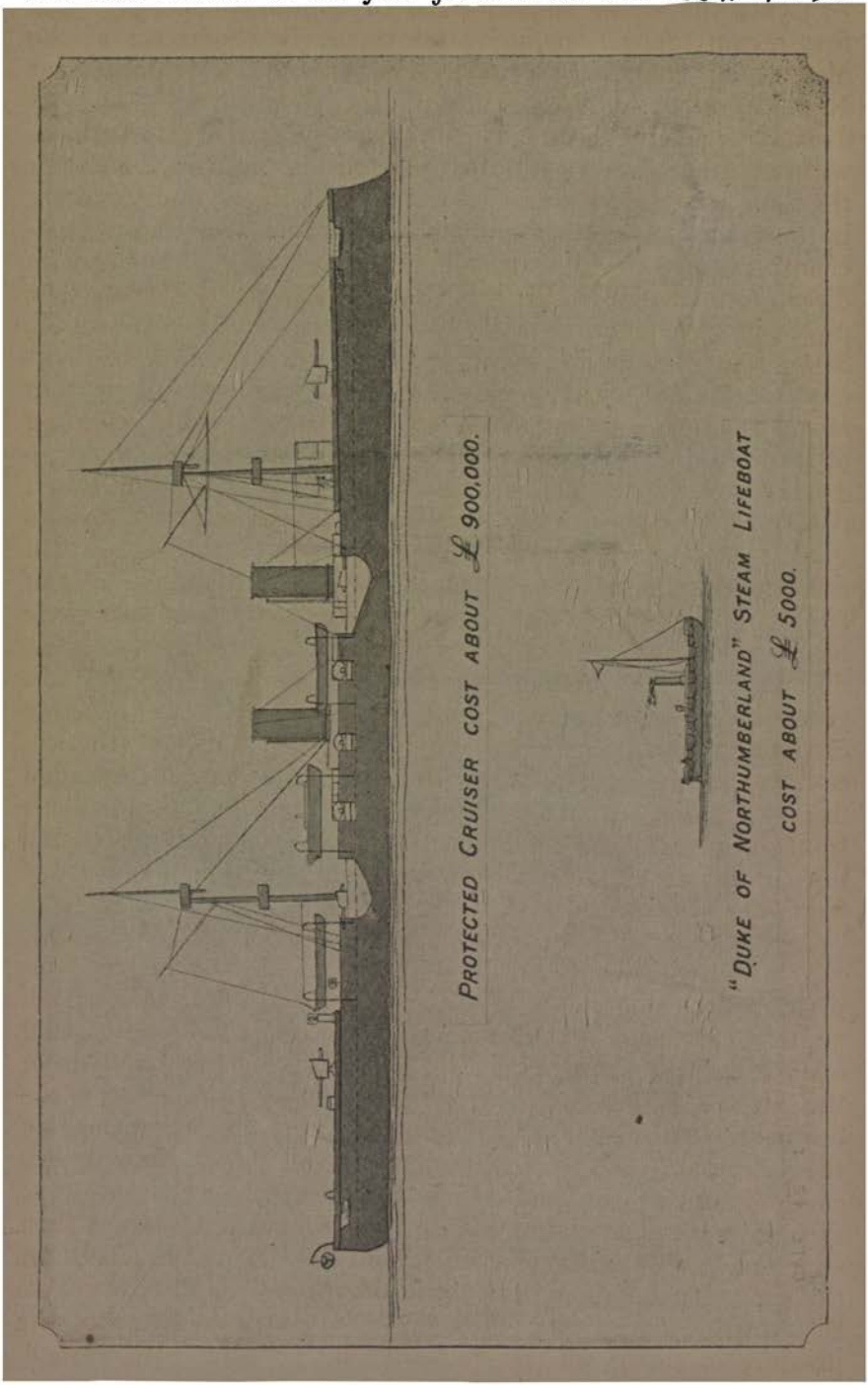
In the boats of the Peninsular and Oriental Company (as

well as in those of other companies steaming eastward through the tropics) there is almost the same comfort and luxury as in those already described, and in addition there are punkahs to be used when the heat is tropical; but as to the sleeping accommodation, that may often be found in improvised beds on the floor of the deck under the stars of the eastern heavens!

It is a matter of deep regret to us that we are obliged here to part company with the subject of steam navigation, if, indeed, we have not already trespassed too far upon the patience of our readers. We should have been pleased to take some notice of the various enterprising individuals and companies which have brought distant lands into closer communion; the remaining Atlantic companies, as the Anchor Line, with its beautiful "*Cities*" *of Rome* and *Paris*, and the German lines, with their comfortable arrangements; the various lines from Liverpool, London, Southampton, Bremen, Hamburg, Havre, and Marseilles to Africa, Australia, the West Indies (notably the Royal Mail Company), the Pacific, and indeed to every part of the habitable world. That would carry us entirely beyond the limits of this essay; but before proceeding to consider the progress of railway enterprise and its significance for civilisation, there is still one subject connected with the mercantile marine to which a brief space should be devoted, namely, the system and means which are employed to rescue the victims of maritime disaster.

The first lifeboat was constructed by Lionel Lukin, a native of Dunmow, in Essex, a town still famous for its well-known matrimonial custom. Lukin took out a patent for his boat, the *Unimmergible*, in the year 1785, but gained nothing by his humanitarian enterprise beyond the inscription on his tomb that he was "the original inventor of that principle of safety by which many lives and much property have been preserved from shipwreck." He died in 1834. Shortly after the period just named (1785) other attempts were made to provide lifeboats, and in 1798 the Duke of Northumberland ordered and endowed one at his own expense, which was stationed at North Shields, and immediately signalised itself by saving seven men from the sloop *Edinburgh*, wrecked on the Herd Sands. Northumberland had not only the honour of initiating a new era in the history of the lifeboat, but gave birth to the heroine Grace Darling, whose exploit is still cited, especially at the meetings of ladies, whose "Auxiliaries" to the National Institution are now to be found throughout the land. The number of boats on the coast continued to increase, but in 1849 there were still only nineteen in England and Ireland, and none at all in Scotland. These boats were under the

management of the "National Shipwreck Institution," of which the total income in the year just named was £354, 17s. 9d.



In 1850 the institution was at its lowest ebb, but it was reorganised, and in 1855 its name was changed to the "Royal

National Lifeboat Institution." It has now 308 lifeboats, including two propelled by steam, and its income in 1894 was £73,526, the whole subscribed from voluntary sources. The first steam lifeboat, named after the early benefactor of the institution, the *Duke of Northumberland*, is stationed at New Brighton, at the mouth of the river Mersey, and its distinctive feature is that it is worked by means of a turbine, without either screw or paddles. Propulsion is obtained through the force exerted by a very powerful centrifugal pump, taking in its water through a supply orifice in the bottom, and discharging it at the sides through outlets pointing in the opposite direction to that in which it is wished to propel the boat. The direction in which the water is discharged can be changed, being regulated by valves worked by handles on deck, without any interference with the running of the engines, and by that means the boat may be moved in any direction; whilst running at a speed of eight or nine knots an hour it can be brought to a dead stop in thirteen seconds. The chief objection raised to-day against these steam lifeboats is their cost—£3500 to £5000—and the cost of maintenance; but if the reader will take another look at the plate, and will compare the cost of the little life-*saver* with that of the life-*destroyer*, costing nearly a million, we venture to think that, whatever may be his views on the abstract question of peace and war, he will give the precedence to the life-saving boat as an effective civilising agent. Since the Royal National Lifeboat Institution was established, its boats, and those of fishermen rewarded from its funds, had up to November 1895 saved 39,238 souls from shipwreck. Steam lifeboats, which are undoubtedly the life-saving craft of the future, are being built in this country for use in Continental states.

On the 6th October 1829 there was a locomotive competition for a prize of £500 at Rainhill, near Liverpool, on the Liverpool and Manchester Railway, the prize being offered by the Company. Five locomotives were entered for the stakes, which were won by the *Rocket*, made by the brothers Stephenson. The following were the conditions of the "running":—The engines were weighed with their boilers charged, and a load was to be added three times the weight of each engine. The water was to be cold, and to each was then supplied the quantity of coal which was deemed requisite for the run. The engines were to be drawn by manual power to the starting-point, and they were to start as soon as the pressure of steam was raised to 50 lbs. on the square inch. They ran consecutively over a course of about two miles in length, which had to be covered ten times, making in all about

twenty miles. Stations were erected at each end of the course to contain the judges. As already stated, the prize was awarded to Stephenson's *Rocket*, which was furnished with a tubular boiler, whereof the invention was claimed by M. Seguin, a French engineer. Her cylinders were 8 inches diameter, with a 16½-inch stroke; the driving-wheels were 4 feet 8½ inches in diameter.

But it will be interesting to give some further details connected with the *Rocket* in contrast with those of the *Queen Empress* and the *Greater Britain*, two locomotives now run-

STEPHENSON'S "ROCKET."

ning on the London and North-Western Railway, designed by the Company's superintendent engineer, Mr. F. Webb, of the Crewe Works. Such a comparison will serve to give the reader the best insight into the immense strides which have been made in this branch of mechanical engineering since the time when railways began to supersede the old stage-coach:—

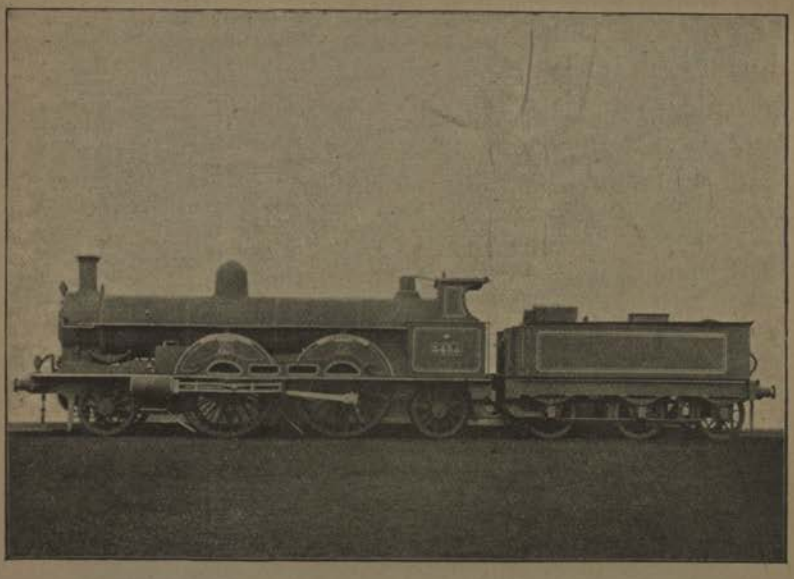
Name of Engine.	Weight of Engine and Tender.				Weight of Load Drawn.				Average Speed per Hour.	
	Tons.	Cwts.	Qrs.	Lbs.	Tons.	Cwts.	Qrs.	Lbs.	Miles.	Yards.
Rocket (Stephenson's) .	7	9	0	2	9	10	3	26*	13	42
Queen Empress (Webb's).	77	2	0	0	160	10	0	0	47	30

and the latter is now the general speed of the express trains on several of the leading railways.†

* It will be seen that the conditions of the competition as to draught of load were not adhered to.

† In his work on "Industrial Evolution in the United States," Colonel Wright describes and delineates "The *Empire State* Express Engine, No. 999, of the New York Central and Hudson's River Railroad," which, he says, "ran for a considerable distance at the rate of 112 miles an hour, hauling its regular train."

To return for a few moments to the earlier engines, which were of a variety of types of construction. One of those which entered the first contest, the *Novelty*, ran without a tender, like some of the present ones, and she drew a coach contain-



WEBB'S LATEST IMPROVED LOCOMOTIVE AND TENDER (CREWE WORKS).

PRIMITIVE ENGINE AND TENDER.

ing forty-five passengers. Frequent repairs were, however, necessary during her trials. The carriages first used, both for passengers and goods, were as rude as the engines were primitive; and for a long time the former were built as much as possible on the model of the stage-coach.* This is also

* Plate copied, by permission, from part of a coloured plate, copyrighted by Mr. Cotsworth, York, and published by R. Tuck & Sons.

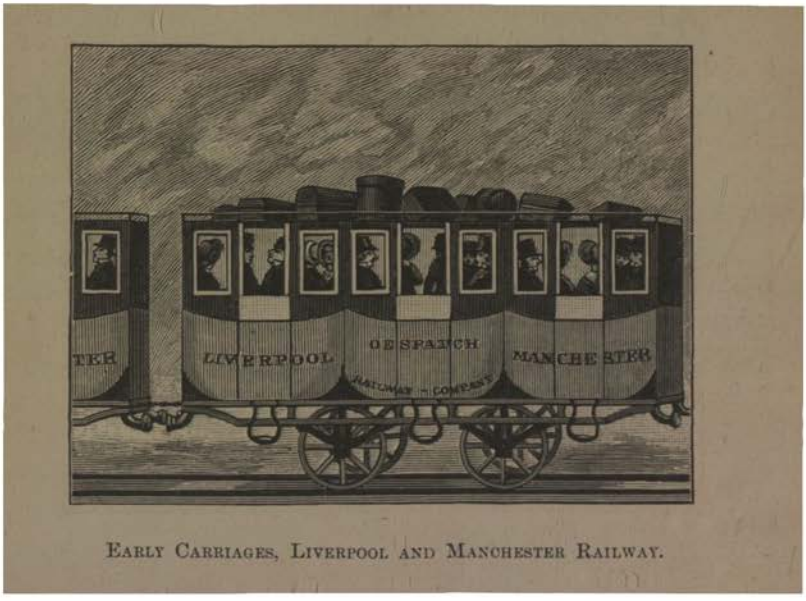
shown by the following quaint extracts from the printed time-table of the St. Helen's and Runcorn Gap Railway Company, which were issued from the Company's office in St. Helens, October 14, 1842 :—

"Times of Departure from St. Helens Station to Manchester.

Quarter-past 7; 10 o'clock; quarter-past 2; and a quarter before 6.
Fares—*Inside*, 4s.; *Outside*, 2s.

"To Liverpool.

"Quarter-past 8; quarter before 11; quarter-past 2; half-past 5; and a quarter before 6. Fares—*Inside*, 2s. 6d.; *Outside*, 2s."



Early Carriages, Liverpool and Manchester Railway.

Then follow similar announcements of trains for Bolton, Wigan, Preston, Warrington; and then—

"To Birmingham, London, &c.

"Persons willing to wait a short time at Warrington may go by the trains at a quarter-past 7, half-past 3, and a quarter before 6."

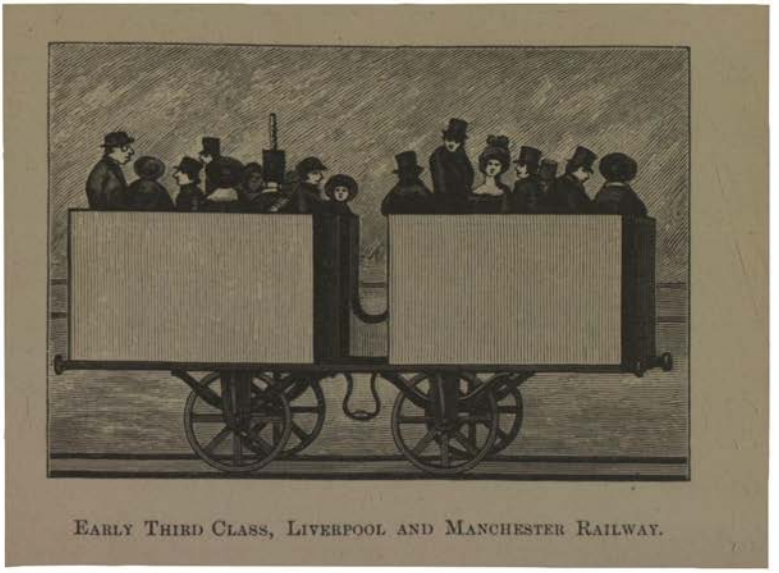
No fares are given, either "inside" or "outside." We are further informed in the same table that—

"To Southport *viâ* Ormskirk.

"Edward Fidler's Patent Safety Coaches leave St. Helens Station for Southport every day, Sundays excepted, on the arrival of the two o'clock train from Manchester. Fares to Southport—*Inside*, 10s.: *Outside*, 7s."

The time occupied during the early years of railway travel by the journey from London to Liverpool varied from nine to twelve hours, and even longer; to-day passengers leave Euston about four and a half hours before they are carried off from the river-side station at Liverpool by the steamer which is to convey them across the Atlantic. The distance between the two cities has, however, been shortened by a few miles.

And whilst the transition from the stage-coach to the railway train was marked in this country, abroad it was still more striking, where travellers had often very diversified experiences. These are, perhaps, well exemplified by a brief account of a return journey undertaken by the present writer from St. Petersburg to Liverpool in December 1849, when the railway only extended a short distance north beyond Berlin. From St.



EARLY THIRD CLASS, LIVERPOOL AND MANCHESTER RAILWAY.

Petersburg he travelled by diligence, an uncomfortable jogging conveyance, to Riga, the time occupied being two days and a night. Detained at Riga, he was obliged to proceed to Prussia in an open cart, lying at night upon a sack of straw, and furnished with a Government pass which enabled him to change horses every two hours. From Riga to the Prussian frontier station occupied two days and two nights more. At Tilsit he made a short detour to Memel, and thence travelled again by diligence to Königsberg, where he tarried a couple of days, chiefly to rest from the fatigue of the previous journey; and from Königsberg on to the railway terminus at Woldenberg. To describe the sensation of sinking into a comfortable seat in the railway carriage, after having bones and muscles shaken and bruised in carts and rickety diligences, would be impossible. But even railways were far from perfect in those days; and it

was only after a long journey to Calais, a rough crossing of the Channel in a "cockle-shell," and a fourteen hours' journey (it was Sunday, and there was only one train on that day) from London to Liverpool, with one refreshment station (Wolverton), where buns were the only food procurable, that the traveller arrived in the bosom of his family just before Christmas Eve. The shortest time for the journey from St. Petersburg direct to London in those early times was from eight to nine days. Even now it occupies sixty to seventy hours, the distance being 1709 miles, whilst from London to Brindisi (about

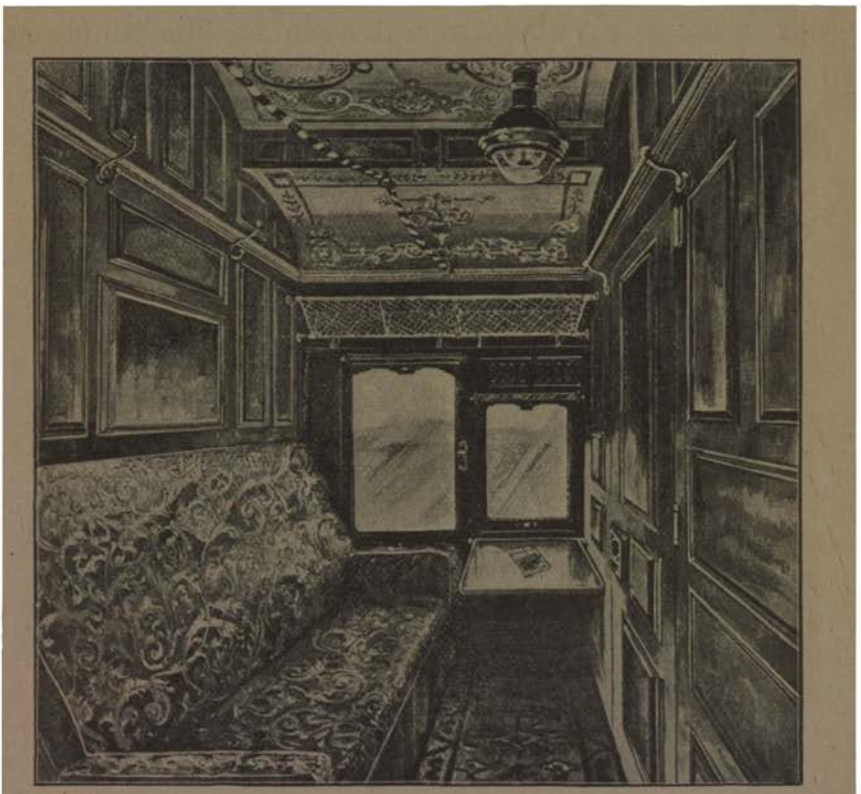
DINING SALOON, INTERNATIONAL SLEEPING CAR.

1460 miles) the Indian Mail conveys the Peninsular and Oriental passengers in forty-eight hours.*

Whilst, as already stated, the first-class carriages were originally built after the model of a stage-coach, with the guard on top of the front carriage of the train, and the "mail-man" on the last, the third-class were more often trucks, which to-day would not be considered fit for cattle. And what a contrast do these early conveyances present when compared with those of the Indian Mail, or the Orient Express of the

* Here is an illustration of the effect of the introduction of railways in the United States. In 1846 Brigham Young, with about one hundred and forty Mormon followers, moved westward from the Eastern States. He got as far as Nebraska, and there sojourned with a tribe of Indians. In April 1847 he proceeded to Salt Lake Valley, the journey occupying three months; to-day it takes thirty-six hours.

International Sleeping-Car Company, with its public dining-room, its smoking-room, its private sitting-room by day and bedroom at night, or even with the third-class dining-cars of the London and North-Western Railway Company. The contrast between the conveyances and general travelling facilities of the two periods reflect but partially the silent change which is taking place in the relations of neighbouring, and even distant, peoples.



INTERNATIONAL CAR: COMPARTMENT ADAPTED AS A SITTING-ROOM.

"By most people," said a writer in one of our leading journals,* "the International Sleeping-Car Company is doubtless regarded merely as one more adjunct to luxurious and speedy travel. You recline on a roomy sofa by day and watch through the wide windows the panorama of Europe unrolling itself; at night you undress and sleep soundly in a comfortable bed; your morning coffee may be brought to your bedside, and three times a day you walk into the dining-car for an excellent meal. Moreover, in case of accident, the heavy car affords you a precious extra guarantee of escape, as I have good reason to know, for once the Peninsular and Oriental Express smashed into a standing

* The *Daily Chronicle*.

luggage-train at Caro Vigno, fifteen miles from Brindisi, at the very point where I was sitting writing; and a minute later I was helping to extricate the wounded driver from the ruins of his overturned engine. The Company, however, has a wider and more philosophic significance than all this. It has begun the task of internationalising the railways of Europe. There is no line of any importance on which its cars do not run through: from Paris and Ostend it branches to Madrid, to Lisbon, to Marseilles and the Riviera; to Rome, and even to Palermo, the farthest point of Sicily; to Berlin, to Warsaw, Petersburg, and Moscow; to Podwoloczyska, the remote frontier of Austrian

INTERNATIONAL CAR: COMPARTMENT ADAPTED FOR SLEEPING.

and Russian Poland; to Vienna, Budapest, and Bucharest, the gay Roumanian capital; to Belgrad, Sofia, Philippopolis, and Constantinople, and finally to coveted Salonica itself. Scores of separate railways are thus traversed, each of them bitterly jealous of its neighbour, most of them divided by hostile tariffs, and by punctilious and bureaucratic customs regulations, and keenly watched for spies and political agents. Into this warring congeries the *Wagon-lit* has brought a principle of collectivism; it laughs at frontiers, it embarks custom-house officials and drops them again when their work is done, it compels the jealous sections to join hands in common service of the travellers of Europe; out of a hundred diversities it has evolved an international unity. From this seed, with time, a strong tree of internationalism may spring."

Allowing for a little enthusiasm, this picture is in the main correct. And now let us carry our inquiry a step farther, and try to measure the relative civilisation of different countries by the extent and development of their railway systems. In another essay mention is made of the number of miles of railway over which letters are conveyed in various states,* but a better criterion of the condition of those countries is found in the relation of the whole railway system to the entire area, and, with certain reservations, it will be found that such a compari-

LONDON AND NORTH-WESTERN THIRD-CLASS DINING-CAR.

son fairly represents the degree of civilisation the country has attained :—

Name of Country.	Area in Square Miles.	Miles of Railway Open.	Proportion of Miles of Railway to total Area.
Belgium	11,373	2,778	1 in 4
Great Britain and Ireland	121,115	20,646	1 in 6
Switzerland	15,469	2,119	1 in 7
United States	about 3,110,000	about 172,000	1 in 18
Turkey in Europe	66,500	838	1 in 79
Japan	147,650	(1892) 1,717	1 in 85
India	about 1,600,000	(1893) 17,050	1 in 90
Russia in Europe	2,080,963	(1892) 18,670	1 in 111

* Posts and Telegraphs.

As we have said, with certain reservations this list not unfairly represents the general state of civilisation in the respective countries. The reservations are as follows:—Belgium and Switzerland are favourably exaggerated, owing to their small area and dense industrial population; so too, is Turkey in Europe, whose one railway is rather an evidence of the enterprise of other European states than of its own civilisation. Unduly depreciated are Great Britain and Ireland, where there are large tracts (in Scotland and Ireland) hardly fit for railway extension, and the United States with whole territories in a state of transition from the uncultivated to the cultivated state. The great aim of the Government of Russia in constructing railways is to secure rapid transit for her armies, and although, in a sense, that may promote civilisation in such regions as Central Asia, a glance at the map of Russia in Europe shows that her system there is mainly confined to trunk lines. Indeed, as a whole, we think our map of railways and telegraphs presents a fair illustration of the state of civilisation throughout the inhabited world.

And finally, regarding means of locomotion for human beings as a civilising agency, it is impossible to close our eyes to the fact that the introduction of the cycle is playing a most important part in the movement. It will surprise many of our readers to hear that there are about half a million cycles (chiefly bicycles) made annually in this country alone, for use at home and for exportation. When first these vehicles came into use in this country, it was almost entirely for the lower, middle, and upper lower classes, such as clerks, shop-assistants, small tradespeople, and well-to-do artisans; and it was considered quite *infra dig.* for a professional man or merchant to ride on the iron horse. Now, so far as the classes, and even the sexes, are concerned, there has been a marvellous expansion and levelling; and a royal princess or an eminent statesman may frequently be seen meeting or passing a labouring man out for an afternoon holiday. Professional men also find this mode of progression very convenient, especially where a sudden call is involved; and the cycle has been introduced into the armies of the world. In Coventry, the centre of the cycle manufacture, several leading doctors use it, as do inspectors, and several councillors come to committee meetings upon them.*

The convenience of the cycle, too, for foreign travel is becoming more and more apparent; and in another way it is producing beneficial results somewhat similar to those brought

* We are indebted for information on this head to Mr. Sturmey, editor of the *Cyclist* and the *Auto-Car*.

about by railways, and especially by the Sleeping-Car Company; it is enabling men and women of various nationalities to mix together under new and favourable conditions. Many persons who had never left their own country, never crossed the Channel or the sea, are now tempted to extend their journeys into neighbouring lands, where their presence on wheels has ceased to cause any surprise, and where they are never subjected to annoyance. Thus men and women work their way, not on the railway, from one great centre to another, but along the highways and by-ways of strange countries, through villages and hamlets; and so they become acquainted with the rural population, which frequently represents the national character more faithfully than do the denizens of the large cities, the halting-places of tourists and cheap trippers, where greed of gain is often the most prominent feature. So far the cycle has promoted healthy exercise, and has enabled the less affluent classes of nearly every civilised country to move about amongst new scenes, thus expanding the mind as well as strengthening the body; but whether or not this form of vehicle will be superseded by the "auto-car" it is difficult to say. After the transition from sailers to steamers, and from coaches to trains and cars propelled by steam and electricity, it would be hazardous to dogmatise concerning the future. One thing, however, is certain, namely, that the application of electricity to locomotion, which has already begun, is sure to extend rapidly, if for no other reason, on account of its safety and cleanliness.*

To conclude, then, with the thesis with which we set out, there is hardly any, if there be any movement of our era which has lent so great an impulse to civilisation as the improved means of locomotion. Whether regarded as a fresh bond between different nationalities, facilitating the interchange of raw materials, of the manufactured products of industry, or of works of art, science, and literature; or whether their discovery and development be looked upon as a practical lesson in the conquest of Nature's forces, the steamboat, the railway train, and quite recently the electrical car, have decidedly taken a foremost rank in the advance-march of the human race.

* Whilst it is questionable whether automatic travelling carriages will ever become popular, especially those worked by petroleum, the movement for introducing auto-CARTS or waggons for the conveyance along the highways of perishable agricultural produce seems much more likely to be successful, and that would be an important factor in inland communication and in agriculture. It would act as a palliative of the monopoly of the railway companies. What *that* means may be understood from the fact that the ordinary £100 stock of the London and North-Western Railway Company is to-day worth £203—all other railways in proportion.

ESSAY VI

POSTS, TELEGRAPHS, AND TELEPHONES, AND THEIR RELATIONS TO TRADE, &c.

MOST people will be of opinion, without, in all cases, being able to formulate proof, that cheap postage and swift, punctual, and frequent posts are closely bound up with the wealth, progress, and intellectual attainments, even with the moral welfare, of the people. They may be ready also to concede that such have been, in a large degree, active contributories to the speed and solidity which have marked the growth of civilisation, especially in the nineteenth century.

Other agencies, it is needless to observe, have also powerfully assisted in the same phenomenal progress—roads; railways; the spirit of enterprise; new discoveries, whether of habitable lands and fresh industries, or in the region of science, in chemistry, metallurgy, and electricity; the spread of education; the labours of religious bodies—all have helped to produce the picture of prosperity and order which, as a whole, characterises civilised society.

Inseparably associated with each element of national progress, the post, as known in our country since the reign of the first Charles, and especially since the accession of Victoria, has played a prominent and indispensable part in facilitating the acquisition and distribution of knowledge, and in helping to the attainment of success where, in the absence of assured communication, industrial, commercial, or political enterprise must have failed.

It may safely be claimed that in proportion to an increase of efficiency in postal organisation—in its convenience, cheapness, swiftness, and frequency—have the several bases on which national prosperity rests become broader, deeper, and more firmly set.

But when it is desired to establish the connection between cause and effect by unassailable evidence, the task is not easy. It is one thing to entertain a moral conviction; another to render it an impregnable fortress.

"The beneficial effect on the welfare of the State of cheap

Sampson Low, Marston & Co. Ltd. — F. Jenkins Heliog. Paris

Rowland Hill

From a photograph by Maull & Fox

postage and quick posts is as difficult to estimate exactly," writes a don of one of the universities, "as the influence on human happiness of the faculty of speech or the velocity of sound."

This at least is capable of proof—that the post, when efficiently managed, has gone hand-in-hand with national progress; and if the sum of human happiness and the welfare of the State are to be measured by material, moral, and intellectual advancement, then it may be claimed that the post, in its widest sense, as an agency for the collection and dissemination of human thought, whether written, printed, or electrically expressed, has not only accompanied, but has to a great extent discovered and developed the springs of prosperous civilisation.

There is no surer indication of the condition of trade, of the activity or depression of manufactures, of the rise or fall in the spending power of the people in this country, than the returns of the Post Office. Even the weekly record of telegrams despatched, which has been kept up for a quarter of a century, is a finger on the pulse of the national circulation; while the payments into the Exchequer, fluctuating as they may be in the case of other branches of the public revenue, are, as regards such as come from the Post Office, a reliable measure of variations of public prosperity.

At the end of the eighteenth century postage was regulated by distance, by enclosures, and by weight. A letter from London to Manchester was chargeable, if "single," with a postage of eightpence; if "double"—*i.e.*, if containing an enclosure—one shilling and fourpence; and if "treble"—*i.e.*, containing two enclosures—two shillings. On a letter weighing an ounce the postage was no less than two shillings and eightpence. Letters to the continent of Europe, and especially more distant parts of the world, cost, in postage, sums which now seem fabulous. As a consequence correspondence was limited and the nations were more or less strangers to each other. Civilisation was a stagnant pool rather than a running stream.

For forty years the British Post Office continued to improve its methods, sometimes hampered by modifications of the tariff thrust upon it by the Government, sometimes at variance with the Government, even with Parliament itself, but all the time surely, if slowly, gaining ground in the estimation of the people, and steadily facilitating trade and the public convenience. The net revenue, which in 1795 was £479,000, amounted in 1838, the last complete year of high rates of postage, to £1,659,500.

Then came the great transformation scene in the theatre of St. Martin's-le-Grand. Uniform penny postage supplanted,

on January 10, 1840, the oppressive and complicated rates to which inland letters had been subjected. Weight alone regulated the charge.

Sir Rowland Hill was about forty years of age when, in 1835, he first gave attention to the management of the Post Office. His great discovery, no doubt, was the fact that distance had very little to do with the actual cost—a mere fraction of a farthing—of conveying a post-letter even between towns situated far apart. Collection and delivery were more important elements of cost; yet all, he found, could be brought well within the limits of a penny—almost of a halfpenny. Uniformity of charge was pure inspiration, the penny rate an outcome of his genius and courage.

In person Hill was of medium height, well built, reserved in manner, and deliberate in speech. Outside the Post Office his tastes lent themselves to physics, perhaps to mechanics, certainly to astronomy. His health was delicate, yet he surmounted with vigour and address all the difficulties and opposition which lay in his path, carried his projects to fruition, and lived until a ripe age.

As a fact, three of the four great mid-century departures in postal progress in the United Kingdom—railways, steam-packets, and the overland route—came with a rush almost at the same moment as penny postage. Railways, which budded in 1830, blossomed into main trunk lines towards 1840; steam communication developed into a national packet service about the same date; while the overland route, of which the first sod had been turned by Lieutenant Waghorn, R.N., in 1829, grew into an accepted highway in the last years of the thirties.

At home the Post Office quickly found out the great value of the railway as a substitute for the mail-coach. It rubbed its hands with satisfaction. An instance of genuine surprise and triumph at the power of steam is to be found in a private letter, written in 1837, on the occasion of the completion of the Grand Junction line, by a leading Post Office official to his chief, when, having left London at eight o'clock at night, and travelled by mail-coach to Birmingham, he found himself and his mails arriving by railway at Liverpool shortly after noon the next day. "It is the first time in Europe so long a journey has been performed in so short a time," wrote the excited traveller, exultant. Bags had for some years been exchanged by train between Manchester and Liverpool, but in that case the saving of time, though considerable, in a transit of two hours as compared with four, did not inflame the imagination nor excite surprise. But to post a letter in London for Liverpool after nightfall on Monday, and receive a reply soon after day-

break on Wednesday, well-nigh revolutionised society, and almost doubled available working time. Civilisation promised to advance by leaps and bounds.

Railways as passenger agencies are treated in another part of this work. Here it will suffice to record that the Post Office pays in round figures to the railway companies of the United Kingdom annually, for the conveyance of its mails, a gradually increasing sum, which now stands at above £1,600,000 sterling, less than two-thirds of that amount being for conveying letter-mails and more than one third for conveying parcels. A supplementary payment of £165,400 is made because of telegraphs maintained on railways and postal telegraphic business transacted at stations.

The relations between employer and employed are mutually profitable and, notwithstanding occasional differences of opinion on the subject of remuneration, singularly free from friction of any sort.

There is little doubt that, had the Legislature foreseen that the owners of railways would themselves become carriers instead of being merely the freeholders of roads which, on payment of tolls, others should have the right to use, abundant facilities for the transit of the royal mail would have been secured.

As it is, the Post Office stands much in the position of a private individual in relation to railways, having to pay for the service which it obtains on terms settled by mutual agreement, by arbitration, or by a legal tribunal.

Payments to railways for the conveyance of mails have grown from small things to great ones—from £2000 a year in 1838 to, as stated, more than a round million and a half of pounds in 1895. The services so paid for consist, as regards letter-mails, in providing space in a train run at hours appointed by the Postmaster-General, with or without a travelling post office and sorting staff attached to it; secondly, in receiving mail-bags whenever tendered and conveying them to their destination in charge of the train guard; and, thirdly, in receiving postal parcels for conveyance by any train except very fast ones. The remuneration for conveying parcels is regulated by the Act of 1882. The Postmaster-General pays over to the Railway Clearing-House Committee, for distribution amongst the railway companies, fifty-five per cent. of the inland postage paid on all parcels which are sent by him by train, regardless of distance, over a part of their journey.

The sum * which the Post Office pays to the railway com-

* Actually: for letter, &c., mails, £1,007,440; for parcel mails, £611,465.

panies for mail services is largely clear profit, less the wear-and-tear involved in the transport of carriages containing the mails, which usually form part, and most frequently only a small part, of a passenger train, and the limitations as to speed, stoppages, and the time-table generally, which may conflict with the convenience of the companies or the public.

At all events, the income derived from conveying mails for the Post Office is about one-tenth of the profit accruing from passenger traffic. This estimate is based on the following data:—The gross earnings of the railways of the United Kingdom in the year 1894 are said to have amounted to 84 millions,* and the working expenses to 47¼ millions; *i.e.*, the costs were 56¼ per cent. of the receipts. Mails are chiefly, although not exclusively, conveyed by passenger trains, which earned, in the gross, 36½ millions. If this sum be diminished by working expenses, at the rate of 56¼ per cent., there would remain a net profit from passenger trains of nearly sixteen millions. The Post Office pays for the conveyance of its mails £1,619,000. What small sum should be deducted because of such of the working expenses of the railway as are applicable to the mails may be matter of opinion; but it follows that, from any point of view, the Post Office is by no means an insignificant customer of the rail, and if the latter is prolific in providing facilities of transport, the former is a prompt, constant, and not illiberal client.

The term "mail-train" has almost, from the beginning of the plan of conveying mails by railway, been identified with speed and regularity. Probably the glamour of the mail-coach lent itself to the mail-train, but the reputation of the latter has been chiefly due to the conditions under which it performed its part—starting at the appointed moment, running at comparatively high speed (though we can now afford to smile at a velocity of only twenty-seven miles an hour), and stopping, in contradistinction to slower trains, at only the principal stations.

The composition of a fully equipped mail-train admits of three important ends being gained—the swift and punctual conveyance of mails, the assortment of letters and parcels in transit, and the exchange of letter-bags with roadside stations while the train is in motion.

In 1894, in this country, 20,908 miles of railway were open for traffic, nearly all of which were covered by letter or parcel mails. Now, 20,908 † English statute miles are equal to 33,652 kilomètres. In 1893 the number of kilomètres of railway used for postal purposes in Germany was 43,150; in

* Giffin and Hopwood, 1895.

† This varies slightly from the estimate on our p. 111.—ED.

France, 37,539; in Russia, 33,741; while in the United States the total reached the high figure of 268,694 kilomètres.

The distance annually traversed by the mail-bags is, of course, immensely greater, because daily services would have to be multiplied by at least 365 to bring out an annual total. Many services are performed more than once daily. In the United States, for example, it amounts to nearly 407,000,000 of kilomètres; the rail being used for postal purposes just twice as much as the road. In France, however, the reverse is the case, the mails traversing 345,000,000 of kilomètres of ordinary roads, as compared with 108,000,000 of kilomètres of railway.

On the continent of Europe the postal administrations have greater freedom in regulating the conveyance of mails by train, and pay less for the service than the Post Office of this country. As a consequence, many facilities are enjoyed by the public abroad, through the agency of the post, which are still denied to the public here; and to the extent, of course, that aids to civilisation are withheld which the British Post Office is capable of rendering, the postal department falls short of its beneficent mission.

The swiftness of the post acts and reacts on commerce and civilisation. It promotes both in their earlier stages; then progress in the one calls for or incites greater activity in the other, until time and distance cease to be the barriers between communities, and all the world tends to become one vast family, having an identity of interests, hopes, and aspirations.

A solid contribution of the post to the expansion of trade and the stability of the Empire lies, beyond question, in the establishment of lines of mail steam-ships to all parts of the globe, not from English ports alone, but the ports of the world.

Statesmen and commercial bodies began, in the thirties, to recognise the fact that in swift, frequent, and regular communication with parts beyond sea lay not only one of the secrets of a prosperous foreign and colonial trade, but the only guarantee of its permanence. The East India Company, the Foreign and Colonial Offices, the Admiralty (which had to frame and administer the several contracts for over-sea communications), and especially the Board of Treasury, were all more or less concerned in establishing the British contract mail-packet services. But the requirements of the Post Office were the final cause, and the department itself was necessarily the predominant partner.

Behind the governmental figure-heads were the real instigators of postal progress—heads of trading houses and the leaders of commerce, the Colonies themselves, and Parliament.

Egged on by these powerful influences, the Government of the day took heart of grace, and set up, in the late thirties and early forties, steam services to the Mediterranean, the West Indies, and North America. Similar political pressure (for little is done in England by the State spontaneously) led to the establishing of the overland mail to the far East, and, in subsequent years, after many delays, of steam packets to Australia.

Although the growth and expansion of steam navigation is treated elsewhere, it may be mentioned here that, in the year 1830, when sailing-vessels alone ploughed the seas, and when mail services from English ports to foreign countries and British possessions abroad were either non-existent or at best slow and uncertain, the value of the external trade of the United Kingdom may be approximately estimated at eighty millions of pounds sterling; in 1840, when a few subsidised lines of mail steamers were in operation, it figured at nearly one hundred and twenty millions; in 1850, at perhaps one hundred and eighty millions; and in 1870, when all the contract packet lines may be taken to have been in full activity, embracing as they did every port of consequence in both hemispheres, the total value of British exports and imports is stated to have been five hundred millions.* In 1890 the value of the year's trade reached nearly seven hundred and fifty millions, since which time its volume has diminished.

In view of these stupendous figures, the cost of the packet service, over and above the produce in postage of the letters contained in the mails transported, was, notwithstanding its formidable appearance on paper, as compared with the value of the trade it fostered, utterly insignificant. In 1859, when for some of the main lines very high subsidies were paid, the net cost was estimated at about half a million—a sum comparable with a foreign and colonial trade of three hundred millions.

Similar services, at not very dissimilar rates, were established by the French with the Western hemisphere, as well as with distant ports in the Eastern world; and Germany, though later afloat, has acted in like manner, and has found its foreign trade advance by gigantic strides. Thus, not to England alone, but to the whole world, has the postal action of the middle of the century proved beneficial.

Stimulated by the growth of foreign and colonial trade, which had been in turn provoked in part by swift and regular mail-packet transit, the means of carrying it, as well as the trade itself, developed with amazing and sustained rapidity. In 1820, before the era of steam mail packets, the total tonnage

* Professor Leone Levi, Graphic Table H.

of the merchant shipping of the British Empire was a little in excess of two and a half millions of tons. In 1850, after the introduction of steam, the tonnage was more than four millions of tons. In 1880 it had doubled. In 1890 it was within an ace of ten and a half millions of tons.

As part of the sysfem embraced within the packet service, the overland route to India, China, and Australia has played a prominent part in furthering civilisation. Even as late as the thirties very little was known in a postal sense of the south-eastern coast of the Mediterranean, and small importance was attached to cheap, swift, and regular posts to India. Admiralty steam-packets, indeed, began to ply from Falmouth to Malta and the Ionian Islands; but as to Alexandria, even the distance was unknown. "It is," said an authority, "480 miles from Malta to Alexandria, in Egypt, and two days twelve hours' passage by sea." The true distance is 819 nautical miles, and the steaming-time, even now, nearer four than two and a half days.

As to making Egypt the British route to India, what greater absurdity could be broached! "The Minister," it was urged, "must, however great the emergency, send his reinforcements, and the merchant his cargoes, round the Cape of Good Hope; while the Government of India must always act on the spur of the moment, and not wait for orders from home." And then the cost! Four steamers, in fifteen years, would cost £1,608,000. "This is, to be sure," wrote the essayist, "a terrific expenditure for conveying a few letters and despatches, and now and then three or four passengers."

It is little more than sixty years since this was written. It may be read with a smile now. Bombay is reached in about a fortnight from London; the few letters and despatches have expanded to nearly seventeen millions in the year (six and a quarter millions of letters and ten and a half millions of other "despatches"); and as for "the three or four passengers now and then," the Peninsular and Oriental Company alone employ approximately ships of the value of two and a half millions of pounds sterling in conveying passengers on the lines traced by Waghorn. So much for latter-day prophecies.

At length the Admiralty decided to extend its steam service to Alexandria. The first steamer with mails for Egypt and India was despatched from Falmouth on March 1, 1835. The opening of the line to Alexandria, however, was far from meaning the establishment of a regular overland mail to India. The Honourable East India Company were not quite so swift on their feet as the Admiralty. That Board might please itself

about running a regular monthly packet to Alexandria. The Company, at any rate, would be more cautious on the Suez side. They would commit themselves no further than a single trip down the Red Sea.

"The Court of Directors give notice," said they, February 18, 1835, "that the present conveyance of a packet by way of Suez is an experiment only, the East India Company not being prepared with steam vessels . . . for the regular conveyance of monthly or periodical packets from Alexandria to India by this route." All the Company were disposed to do was to direct the Government at Bombay to send that old familiar friend the *Hugh Lindsay* down to Suez to meet the March steamer from Falmouth.

Still, here was a beginning. Soon the Honourable Company acquired other steamers, and voyages to and from Suez became more frequent. Then vessels of the Indian Navy were placed on the station, and the overland mail began to take shape. Waghorn was working hard to improve the transit through Egypt; but he lacked means, and without a plentiful expenditure of money little could be done.

The postage levied by the new route was high: from London to Falmouth, 11d.; Falmouth to Alexandria, 2s. 3d.; Alexandria to Bombay, the East India Company levied on a quarter-ounce letter half a rupee.

Slow as it was and costly, whether for letters, passengers, or freight, here at last, before the thirties had spent themselves, was an overland mail. Thenceforward the history of the overland mail is the history of the Peninsular and Oriental Steam Navigation Company. Their splendid steamers, by the swift services which they perform through the Egyptian Canal between Europe and India, have built up an enormous trade, and have strengthened the ties of India and England to a degree which no other agency could have accomplished.

A passenger from London may have spent a fortnight in India and returned to his home on the Thames, while a traveller by the long sea route, in Lord Ackland's time, might still be on his outward voyage, buffeted by the winds between the Equator and the Cape.

As a consequence India is a holiday-ground for young statesmen and men of leisure seeking knowledge. Native gentlemen send their sons to the English universities. The races, though still widely apart, begin to approximate. An Indian has taken his place in the British Parliament; the English language spreads in Hindostan.

As Western civilisation grows in that vast Indian Empire, the growth of the post is swifter and yet more swift. The

hundred days of the forties have fallen to fewer than a score: to Egypt, the fifteen days, *viâ* Gibraltar, from England, to hardly more than five by way of Brindisi. Conventions between the British, French, and Italian Governments secure that, promptly on the arrival of the mail steamer at Calais and Brindisi respectively, a special train shall whisk the overland mail through continental Europe with the speed of an express. The bags so conveyed are numbered by hundreds per journey. Parcel boxes by the longer route from the Thames swell the annual total beyond a hundred thousand packages.

The fifteen days which once were needed to land the outward mail at Alexandria now deliver it at Bombay. The thirty days or so which once carried the Australian bags no farther than St. Helena now enable them to touch the Australian continent. The handful of postal packets which sixty years ago went to and from Australasia, *viâ* the Capes of Horn and Good Hope, are succeeded by the eighteen and a half millions which are now exchanged in a year with that continent, *viâ* the Isthmus of Suez.

As the posts improve, empires grow. The swift mail has no less contributed to the opulence and growth of the great cities of Sydney and Melbourne in the far South-east than to the consolidation of that vast community stretching from Halifax on the Atlantic to Vancouver on the Pacific in the far North-west.

Even as the pen leaves the paper the note is sounded of a yet swifter and more direct mail service, which shall hasten the higher growths of civilisation in binding up closer and closer still with the mother country that chain of colonies which, in an unbroken line for ten thousand miles, follows the course of the westering sun.

The establishment of the book post was a measure which, coupled with the abolition of the excise duty on paper, gave an immense impetus to literature in all its branches, and to civilisation, with its humanising influences. All nations have seen the importance of a low rate of postage, and of transmission by quick posts of books and newspapers. Within the limits of the book post there are now transmitted in the United Kingdom no fewer than seven hundred and sixty-six millions of packets, including newspapers, which form about one-fifth of the total.

Incidentally, the cause of civilisation has been advanced by the solid and lasting service which the Post Office has rendered to the State (in an area quite outside its normal sphere of operations), in encouraging, amongst classes prone to be wasteful, habits of thrift, by establishing the Post Office Savings

Bank. Other banks of course there are which receive the savings of the provident; but whatever their merits and advantages, they lack the accessibility of the postal bank and the national guarantee of solvency which it enjoys.

Early in the century it occurred to a member of Parliament (Mr. Whitbread) that something might be done towards encouraging national thrift by utilising the Post Office. The idea slumbered for forty years. Meanwhile trustee savings banks, penny banks, and other devices for taking care of small savings sprang up, and in some cases attained large dimensions. They resulted, too, occasionally in large defalcations.

England is not the land of sudden surprises; but when the forty years were spent, Charles Sykes, a banking agent at Huddersfield, revived Whitbread's notion, gave it shape, pressed it on public attention, and, with some needful polishing of its provisions at the Post Office, carried it into law. He received the honour of knighthood.

There was no connection between post-letters and the money savings of the thrifty; but the Post Office took kindly to the new departure. Its machinery lent itself without effort to the novel work. Its eleven thousand agencies carried the banking business into every village; its watchful system of accounts precluded substantial fraud; the guarantee of the Government itself gave solidity to its operations.

Money from the provident poured in by cart-loads. The department could barely keep pace with the active demand on its care-taking. Most poor people who had a shilling to spare opened an account; depositors therefore came by the thousand; their deposits had soon to be reckoned by the million.

After an existence of rather more than thirty years the Post Office Savings Bank has more than six millions of accounts open, and in its custody more than ninety-four millions of pounds. Surely this is a splendid record, and pregnant of good work in the future for the amelioration of the condition of the labouring poor.

An excellent illustration of the perfection to which Post Office processes are carried will be found in the rapidity with which a depositor in the Post Office Savings Bank may, in urgent need, obtain repayment of a portion or the whole of his deposit. Thanks to a swift telegraph service and good management at the Savings Bank, a depositor applying by telegraph for a remittance receives his money, if he applies in London, in an average of thirty-eight minutes, or within the hour elsewhere in the United Kingdom.

Austria, Italy, and six other States, including Japan, and eight British possessions, including the East Indies and the

Dominion of Canada, have adopted post office savings banks, and modelled their constitutions in close accordance with the British system; and in France, where post office savings banks have been in operation since 1882, that system, it is said, is meant to be more exactly followed in future. So successful has been the institution, so much akin to the thrifty habits of the French people, that at the end of the twelfth year more than two and a quarter millions of persons were depositors, and nearly seven hundred millions of francs were in deposit. The tendency of the working population of France to lodge large sums in an institution guaranteed by the State must surely tell for a settled order of politics, and therefore for stability of government; and that, in a powerful and enlightened country, must also tell for the best interests of civilisation.

On the other hand, it is surprising that so prosperous and extensive a country as the United States of North America, whose people represent the forces of energy and progress raised to the highest point at present known, should not have utilised the organisation of their Post Office in the direction either of savings banks or telegraphs. The latter are still in the hands of private companies, whose aim must be the profit of their stockholders alone, and the former, notwithstanding many tentative inquiries, are, it is believed, still withheld from those to whom they would prove a priceless boon.

The Electric Telegraph and Telephone.

The first inkling of the great future which awaited the electric telegraph in the hands of the Post Office was the entry of two wires into Smirke's Building, in St. Martin's-le-Grand, in 1848. A private company, led by John Lewis Ricardo, member of Parliament for Stoke-upon-Trent, and an acquaintance of Rowland Hill, desired to extend its operations, and agreed, in return for the use of part of a passage-way as an office, to transmit messages relating to the business of the Post Office at reduced rates.

Fifteen or twenty years later, public opinion being aroused because of high charges and indifferent accommodation, the whole telegraphic system of the country was turned over to the Post Office, and the Postmaster-General of the day assumed its active control on the 5th of February 1870.

Almost instantaneously postal methods — especially the administrative ability of the Post Office and its settled organisation — began to tell. Following Rowland Hill's plan of uniformity of charge regardless of distance, the telegraph tariff was lowered from a maximum of four or five shillings to a

shilling for twenty words, and ultimately to sixpence for twelve words. The limits of free delivery were extended, and in effect the average cost of an inland telegram was reduced from something over two shillings and twopence (charges for porterage occurring more frequently under the old system than under the new one) to about sevenpence halfpenny.

The whole system of telegraphy was vastly improved, and celerity of transmission between even the remotest places assured.

In a quarter of a century public telegrams have increased from about six millions in a year to seventy-two millions. There are hardly fewer than ten thousand telegraph offices in operation, and the network of wires is so arranged that it is almost as quick to telegraph from John o' Groat's to the Land's End as from Primrose Hill to Piccadilly.

The telegraph has produced a great change in the trade of the world. Professor Leone Levi says * that—

"With means of almost instantaneous transmission, business transactions have become more rapid in execution, more certain in their character, and founded upon more diffuse intelligence than when all information was communicated by letter. The range of speculation was also greatly lessened thereby, and room for great profits or losses proportionately diminished."

The Post Office, by its quick posts, may not have enabled the Foreign Office to dispense with its special messengers, but there can be little doubt that it takes indirectly a large and beneficial share in diplomacy by in part providing swift and accurate telegraphy.

A glimpse may be caught of the part which modern telegraphy plays in diplomatic regions by reason of the sums voted by Parliament for Foreign Office telegrams. The days of secret service money may have gone by, but foreign telegram money looms large. For such as are sent by the Foreign Office in the current financial year (1895–6) £32,250 has been provided, while the Colonial Office and the Admiralty are expected to lay out in like manner more than half that sum, viz., £16,750.

In all probability money so spent makes a good return. A five-pound telegram which averts a war is not an unwarrantable luxury. A Government telegram over the short-lived first Atlantic cable, which perhaps cost £50, saved, it is said, an outlay of ten thousand pounds in countermanding the return of a regiment. But the Post Office, it must be owned, neither put down the Atlantic cable nor laid the early wires to the Continent.

Telegraphy has other fields besides the commercial and

* History of British Commerce.

social. Even on the theatre of war the Post Office enters, not only to collect and deliver military correspondence, but to assist, by trained officials which it sends with the forces, in directing by telegraph the operations of war, and maintaining instantaneous transmission of intelligence between headquarters and army corps, the General and the War Office.

The transfer of the telegraphs to the State has been of incalculable advantage to newspapers, especially to the provincial press, which under the old telegraph companies received an abstract of news contained in the London daily papers, prepared by the companies themselves, together with various market reports.

On the Telegraph Acts of 1868–9 becoming law, central agencies, established by the associated press, collected and edited news. The Post Office acted merely as a telegraphic carrier for the press, at rates prescribed by the Act of 1868. These, on the face of them, seemed not unreasonable. A rate of a shilling, which franked twenty words of a public telegram, was to cover seventy-five words of press news by day and a hundred by night. These, although liberal terms, were not, all things considered, unduly so.

But the clause of the Act which fixed the shilling rate contained another provision. At a charge of twopence per seventy-five or hundred words, as the case might be, a copy of the same message was deliverable elsewhere than at the address of the original message.

Perhaps the result has hardly been what the framers of the Act intended. The twopence per copy rate has brought down the charge to the press to an average of 4½d. per hundred words; in other terms, while the public pay an average of 7½d. for fifteen words, the press pays only 4½d for one hundred words. At the public rate it would have to pay more than four shillings. Private telegrams contain annually nine hundred and seventy millions of words; press telegrams six hundred and fifty millions, or two-fifths of the total number of words transmitted over postal wires. The net loss incurred by the Post Office in telegraphing six hundred and fifty millions of words at 4½d. per hundred is estimated at three hundred thousand pounds. Still, it can hardly be said with truth that that is public loss from which the public derive substantial benefit. The swift and accurate dissemination of intelligence affecting the nation at large is a very bulwark of our liberty and security, and no price is too high to pay for whatever makes in that direction.

The introduction of the telephone has already been attended by very remarkable results. It has revolutionised the methods

of transacting business in the large towns, and in a hundred ways, especially in affording the means of swiftly securing medical advice in cases of sudden illness, it is calculated to revolutionise national habits in social and domestic matters. Its powers are likely to come home to the public even more forcibly than those of the electric telegraph. For it is already beginning to do as much as the telegraph has done in bridging over great distances. The telegraph, in 1851, astounded the public by transmitting almost instantaneously from London to Paris symbols translatable into words. Every day, and all day, the telephone, from a dark cupboard in Newgate Street, conveys articulate speech between the same points.

The telephone has been coldly received in England. A court of law decided, many years ago, that the use of the instrument is within the postal monopoly of telegraphs. An obvious step would then have been to take a parliamentary vote for a liberal application of the new invention to public and private wires. But the Government fought shy of the new-comer. The capital debt of the telegraph was already heavy enough: all responsible authorities shrank from increasing it. The telephone was then an imperfect instrument; it had the moral protection of a patent; private enterprise was said to be willing to launch it as a commercial venture. The Government hesitated to take active measures; eventually by licenses, which proved to be unworkable, made away with its birthright, built up vested interests, and missed its opportunity.

As compared with some other nations—the United States especially—England has lagged behind in utilising the telephone, to an extent which is almost ludicrous. Only one person in 520 is a subscriber to a telephone exchange. Millions upon millions of the English people have still but a vague idea of the utility of the telephone in the purposes of daily life. Parliament is hard at work, by means of committees, in seeking a remedy. There is but one effective solution of the whole question—a free hand to the Post Office and a moderate tariff of charge. That agreed to, the Post Office could ensure a magnificent future to the telephone, whatever it may yet be able to do for the telegraph.

The Parcel Post.

Not without its influence on civilisation—an influence felt even in the native settlements on the western coast of Africa—is Professor Fawcett's parcel post. The fact can be easily established that it has occupied vacant ground and stimulated parcel traffic without encroaching injuriously on the business

of other parcel-carrying agencies, by comparing the railway returns of the Board of Trade for 1884 with those for 1894.

In the decade the mileage of railways open for traffic had been enlarged to 20,908 miles, by an increase of 10.83 per cent. During the same period the gross receipts derived from general merchandise had risen by 14.02, and from minerals by 16.12 per cent. Similarly, gross receipts from passenger traffic were larger by 18.68 per cent.; thus showing that, under these three great heads of revenue, the gross receipts accruing to railway companies from a mileage greater by 10.83 per cent. had increased by a percentage ranging from 14 to about 20 per cent.

The parcel post came into operation in August 1883. The Board of Trade returns for that year also show that the railway companies received from parcels a total sum (including excess-luggage charges, carriages, horses, dogs, &c., but excluding payments on account of parcel post parcels) of £3,290,000, and in 1894, from precisely the same sources (the parcel post being, during the whole of the ten years, in full operation), £4,600,000. The increase under this head was therefore actually 39.81 per cent.

Concurrently, the Post Office carried on a flourishing parcel business. In 1884–5 it earned £508,247 in the gross from parcels, and paid over £256,572 to the railway companies for their conveyance; in 1894–5 it earned £1,285,367 gross, of which the companies' share amounted to £611,465. It follows that, while the parcel traffic which the companies retained had grown by 39.81 per cent., the payment received by them in the same decade from the Post Office had grown by 104 per cent.; *i.e.*, from less than three hundred thousand pounds a year to more than six hundred thousand.

Adding to the railway receipts from parcels the postal contribution, that source of revenue has increased, in the decade, by 45 per cent., while other branches of revenue derived from a mileage which has continually been added to have increased at the most by 20 per cent.

Proportionately, it is fair to assume that the general convenience of the public—its welfare, its social, even its intellectual and moral progress—equivalent terms for civilisation—have been assisted by the parcel post.

Probably, still more far-reaching in its ultimate effects than the inland parcel post will be the foreign and colonial parcel post, which, with a few notable exceptions (the United States, Brazil, and Russia), now extends to all parts of the world.

According to the latest statistics, the number of parcels

exchanged by post with British colonies and foreign countries during the year 1894–5 exceeded two and a half millions; *i.e.*, rather under a million outwards, more than a million and a half inwards. In the aggregate, these parcels represented a declared value approaching one and three quarter millions of pounds sterling. Thus, it would seem, the parcel post has done some service to the foreign and colonial trade of the country as well as to its inland trade. When rates of postage are lowered by mutual concessions, and the maximum weight allowable is raised, and when the United States of America waive objection to such a facility with the United Kingdom, the future of the foreign and colonial parcel post, as an aid to civilisation at large, will be bright indeed.

What does this great social engine, known as the post, accomplish for the country at large? It collects and delivers in the course of the year, throughout the length and breadth of the land, close upon three thousand millions of postal packets —the letters of merchants, the letters of friends; patterns of wrought stuffs; parcels of gifts, merchandise, and industrial products of every kind, of newspapers and magazines. In short, literature in all its branches it benefits, receiving from the author, the printer, and the publisher literary works in their several stages, and delivering them completed to the reader, perhaps beyond sea.

By its express system, it enables letters and parcels to outstrip the ordinary inland post.

It transmits sixteen hundred millions of words by telegraph, keeps commerce in profitable activity, and floods the newspaper press with intelligence. Its telegraphs and telephones interlace the three kingdoms and spread intelligence throughout the world. It supplies private telegraphs in town and country, and regulates communication with all parts of the continent of Europe.

The Post Office garners up and invests at a profit nearly a hundred millions of pounds sterling of the national savings; it issues policies of life insurance, of which ten thousand are at this moment effective; provides immediate and deferred annuities—fourteen thousand of the former and a handful of the latter.

The money order branch issues nine millions of mandates, and pays to their order twenty-five millions of pounds—seven and a half in England and Wales, two and a half in Scotland, one and a half in Ireland. By the same means it receives from foreign countries a million and a half of pounds, and sends three-quarters of a million to them: from the Colonies,

come in by money orders a million and a quarter; to them flows about half a million sterling. So, on the whole, if England sends by money orders twelve hundred thousand pounds out of the country, she receives a solid two and three-quarter millions back again. The money order branch pays the pensions of soldiers and sailors—nearly two and a half millions of pounds to the one, nearly a million to the other. It acts even as a remitter, though not as a collector, of taxes, transmitting to the Excise well on to a million and a half, and to the Inland Revenue Office little short of half a million of pounds sterling.

No section of the community, whether at home or abroad, fails to benefit in some form or other by its vivifying, civilising influence.

But all figures, all numbers, pale before the prodigious growth of postal orders. It is barely fifteen years since the first one was issued. Close upon five hundred millions of mandates, not negotiable but payable at sight, represent for a year the issues in number; in value they are about a fourth of the National Debt. In 1894–5 as many as 498,993,995 orders have been actually sold across the postal counters, of the face value of £196,573,847. Eighty-six millions, for twenty shillings each, have been sold; so giving some idea of the convenience of a £1 note to the community. No other values of postal orders come near this great sum, the next highest total being sixty million pounds' worth of ten shilling orders.

In the aggregate, the British public, in the financial year 1894–5, have placed or left in the hands of the Post Office more than three hundred and twenty millions of pounds sterling for purposes external to the primary vocation of that department—viz., carriage by telegraph and post—external, that is, to the transmission of seventy-two millions of telegrams and three thousand millions of postal packets.

Yet the United Kingdom has in some respects fallen behind other nations in the postal race: she neither carries her parcels so cheaply nor collects trade charges on their delivery, as India, the Cape of Good Hope, and some Continental nations have long done; she ranks but second in the number of letters per head of the population, only third as regards all sorts of postal packets in the same relation, and still only third in the amount of her postal receipts. But in the net profit of her postal operations she stands head and shoulders above the rest of the world. The United States collect fourteen millions of pounds sterling, and spend fifteen millions in collecting it. England gets in rather less than eleven millions, but pays out little more than eight. She reaps an annual profit of two and three-quarter millions of pounds.

Amongst Continental states, Germany, it is probable, under a singularly able administrator—Herr von Stephan—has given most attention to the perfecting of postal communication. But, judging by the number of letters—twenty-eight annually per head of the population—her success in cultivating correspondence is less than that of Switzerland, whose people write nearly thirty-three. Holland and Belgium figure each at nineteen letters per head of the population, and France, with its teeming centres of active life, fewer than eighteen.

The full development of the resources of Italy has yet to take place. Meantime, the average Italian writes only six letters a year; and in Russia, where civilisation has yet a stupendous work before her, it will surprise none to hear that a letter and a half in a year is as nearly as possible the average individual product.

There may be placed in striking contrast the United States of America and the British possessions in India. In both, the posts are admirably and liberally administered. In both are enormous areas yet to be populated; in each the postal distances covered may be measured by thousands of miles. But in the one case civilisation has raised almost every inhabitant to the level of an educated being: an American writes, on an average, forty-three letters a year. In the other case heathenism over wide areas is still, in its worst forms, rampant; the gentle influences of civilisation are looked at askance; between the educated and ignorant a great gulf is fixed, which remains yet for the post to overleap. What wonder, then, that even one letter a year should represent the average correspondence by post of an inhabitant of British India?

The progress and influence of civilisation, as traceable to the beneficent operation of the post, cannot, it is true, be weighed in the balance nor measured by the foot-rule; yet some significant facts may be stated, from which the reader can draw some conclusions.

The population of the United Kingdom at the date of penny postage was twenty-seven millions: it has now reached thirty-eight. The value of British trade with the Colonies and foreign countries, which in 1805 only amounted to sixty-six and a half millions, and in pre-penny postage days did not exceed one hundred and nineteen millions of pounds, has grown within recent years, as stated, to the stupendous total of seven hundred and fifty millions. The income of the country derived from taxation stood at fifty-two millions; this year's budget looks for ninety-six. A hundred years ago, when the population was only sixteen millions, the public revenue was but

little over eighteen millions of pounds. The personal property of the country, valued at two thousand millions of pounds, is now estimated to have reached ten thousand millions.

Finally, letters pure and simple passing through the post have risen from three to forty-five per head of the population, and to seventy-four, if all postal packets, and not letters only, be taken into account; and the gross revenue, which in 1795 stood at three-fourths of a million,* and well under three millions in the old high postage days, in 1895 reached nearly eleven millions,† or, if we add the telegraph collection,‡ to more than thirteen millions.§

It would hardly be too much to claim that, when postal development moved but slowly, the civilisation of the world, the details of British greatness—victories by land and sea alone excepted—progressed but slowly too; but that, when there came a full display of the potentiality of the Post Office, all the elements of prosperity swept onwards as the sea. It seems to be largely so at this moment, although there is yet room and to spare for further enlargements of the usefulness of this national institution.

The Post Office of late years has been a rapidly widening field for the employment of men and women. In 1865, just after the establishment of Post Office savings banks, and just before that of postal telegraphs, the number of established officers of both sexes was 16,000; in 1895 the number is 58,000. Counting in persons who do not hold established appointments, but are the assistants of postmasters and others, there are 138,738 officials in the service of the department. If to this total be added those who are employed on postal duties and paid by mail contractors—such as drivers, stablemen, and the like—the name of the postal force is legion, and the benefits accruing to the working-class at large far-reaching and substantial.

In fact, the political economist would find an inexhaustible field for investigation in the fresh sources of industry brought into play by the quickening and cheapening of the means of communication. The telegraph and telegraphic rates of charge offer good examples. Before the telegraph existed the fishing industry languished. The greater the haul on the coast, the greater the embarrassment: no one knew where there was a market for this perishable commodity. Farmers by the seaside have been known to manure their fields with a too abundant catch.

On the wire being brought into play, Arklow and Kinsale, in Ireland, rose into prominence. Large dealers knew exactly

* £745,238. † £10,748,014. ‡ £2,589,986. § £13,338,000.

where to buy fish in quantity, and the fishing-folk where to send it. As the cost of telegrams diminished, the smaller dealer could afford to telegraph for his daily supply. So, more or less, all over the United Kingdom.

In Norway the State has outdone England in providing telegraph facilities for the fishing industry. Between the mainland and the islands which fringe the coast, and across the fiords which indent the littoral, it has laid no fewer than 263 submarine telegraph cables.* These, suitably connected with the land lines, place the seaboard in instantaneous communication with all parts of the united kingdom of Sweden and Norway.

In Denmark a similar course, if with a different object, has been followed. The coast in the North Sea is fringed with telegraphs, which, in case of need, summon help to vessels at sea threatened by storm or other disaster which may be sighted from the land. It has laid as many as fifty-five submarine cables, largely for this purpose.

England, slowly following Denmark, is carrying the telegraphs to coastguard stations and lighthouses, a system which may be seen in completeness in the bay of Liverpool.

When the telegraph was first extended to the Continent only large transactions, such as the purchase of cargoes of wheat, could bear the cost. When the rates were somewhat reduced fruit merchants could afford to receive parcels of foreign fruit, and the food-supply of the country was proportionately enlarged.

But there is another side to the picture. A certain well-known writer refers† to "George Eliot's words, 'that periodicity of sensations called post-time.' It is the time at which, from the outer world, trouble and sorrow may enter into the quiet home. The door is no longer shut in the face of the wolf; it is of necessity opened for a little space." All that the post brings is not happiness; a part of what it does is a foe to civilisation. But as much may be said of all human institutions; none is an unmixed blessing.

If of the making of books there is no end, of the circulation of fraudulent and begging appeals (some of the latter legitimate, many not) there is no limit. Until lately lottery prospectuses came into the United Kingdom from abroad under a halfpenny stamp, and the country was flooded with them. Now, prohibited in open covers, they enter, though in smaller volume, by closed post, and the snake, though scotched, is not killed.

* Shown as on the mainland on our map.—ED.

† St. Andrews, &c.; Longmans, 1894.

Frequency of post and unlimited correspondence play their part in the wear-and-tear of life—witness the biography of the philanthropist, the late George Moore.

In the telegraph branch, speculation—most of it a necessary part of commercial business, but a great deal only a shade, if at all, removed from gambling—largely avails itself of the wire. The trader or broker in one town, who, by means of the telegraph, can outwit a less well-informed merchant in another, has done the smart thing, and reckons himself, and is reckoned, an astute man of business. The racing fraternity—such of them as reap without sowing—use the telegraph in betting matters so largely that a paternal Government provides, at all the great meetings, and at many of the smaller ones, an effective staff of picked telegraphists, and such a supply of wires as to rival, if not to distance, the most liberal preparations of the kind at the largest commercial centres.

Still, the broad fact remains that all ages, all classes, all professions, all callings in life, have benefited by the cheap, swift, and frequent post; all nations have felt and acknowledged its civilising influence. Taking it altogether, no creation of human ingenuity has been more fruitful in its results, more successful in its mission as a popular benefactor, than that State organism which is known at home and abroad as the Post Office.

Standing on the threshold of the twentieth century, with an army of a hundred and thirty thousand persons at its back, an income of eleven millions of pounds sterling in its till, and ninety-four and a half millions in the strong-box of its Savings Bank, what are the prospects of our own Post Office in the not far-distant future; what its potentialities for still greater services to the State?

The achievements of the past hundred, especially of the past fifty, years point the way to goals yet to be attained, to fields yet to be won.

Delivery of postal packets at every house in the land is the first modest victory which a Postmaster-General, desirous of handing down his name to posterity as a benefactor of isolated spots, will, after many failures on the part of his predecessors, at length bring about. But the Treasury must first be again filled to overflowing before money will be spared for this useful measure. None but those who reside where letters are not yet delivered by the postman, but have to be fetched from afar, can appreciate the value of so real a boon and its civilising tendency.

An extension of the plan of payment on delivery of trade charges for the invoice cost of articles sent by parcel post will be the next beneficent step.

As the new century makes its way, uniformity of postage, such as not even the great reformer could have dreamt of, will sweep away his famous inland penny. A halfpenny will uniformly be the unit of postal charge under rules so simplified that even he who runs to the post with his letters may read.

Within the British Isles a halfpenny, which now franks a two-ounce postal packet, open, to its destination, will carry by swift post a quarter-pound—by a slower post a half-pound packet, closed. Magazines, newspapers—all periodical publications, in short, will form a third division (as will also a local post for the benefit of garden and farm produce and shop parcels), for which the rate of charge will again be a halfpenny per half-pound, but without distinction as to speed.

The postal tricycle, worked by an improved system of electrical storage, and carrying letters and light parcels, will establish hourly and half-hourly posts within the limits of large towns and a liberal suburban or rural range. In all the cities advanced methods of pneumatic communication will deliver express letters, swifter than a cab can travel, and at a fraction of the cost of employing an express messenger.

One pound postal orders will be made a legal tender; annuities and insurance will be popularised and carried into every home, instead of hanging fire in a back room of the Post Office; trustee savings banks will be abolished, and Government security (through the Post Office) afforded to every deposited penny of the thrifty. The maximum of deposits will be raised, so that a larger sum annually and a larger sum in the aggregate than are now permissible may be legally deposited. Postal telephones, like gas and water, will be taken at low charges to every house; rural districts will part with their desolation; the hamlet, the farm, and the garden will once more flourish as the green bay-tree.

The Post Office will take up the phonograph, and, by contrivances which it will know how to devise, transmit to a distance oral reports, so that the words of a statesman in Parliament may be heard in the clubs and news-rooms of Edinburgh, while, a few sentences onwards, the orator at Westminster will, by his eloquence, be still delighting friends and dumfounding opponents.

Abroad, on the high seas, swifter mail steam-ships, subsidised by the Post Office, under binding contracts as to construction and speed, of great length and proportionate breadth, fitted with electrical machinery, and crowded with mail-bags and parcel-mails, will devour the ocean at the pace of a mail-train, their dynamos and motors actuated perchance

by some cunning utilisation of the Atlantic wave, or by the sagacious use of a new combustible.

At last, assuming control of deep-sea telegraph cables, laid in duplicate and triplicate, the Post Office will inaugurate a penny-a-word telegram to all parts of the world, whilst the same coin will frank an ounce letter. As there is a universal letter-rate, so will there be a universal parcel-rate of postage; and all parts of the world will exchange the gifts of civilisation with one another.

The imagination may permit itself still greater license. Pegasus turned loose in the courtyard of the Post Office is capable of loftier flights than when harnessed to the mail-cart.

Strikes, which ruin trade and savagely ill-treat both employer and employed, may cease, under the coming order of things, because the organ of public opinion seated at Whitehall, or where not, will hear by phonograph, from the first, the angry utterances of the aggrieved, and speak ear to mouth with the principals on both sides. Even the nations will be at peace, because no misunderstanding can arise that the telegraph, the telephone, and the phonograph, so developed by administrative ability, will not instantly clear up. Pruning-hooks and ploughshares (already have Khama and other South African chiefs turned their attention to the latter in the ploughing fields of Messrs. Ransome) will at last take their rightful place in the armoury of nations, and fleets and armies become to some extent things of the past. The language of this country and America (who between them have so far invented or perfected every new appliance for facilitating rapid intercommunication between nations) will become the language of the world.

These are some of the achievements of the future which the friends of civilisation may ponder, and egg on the postal authorities of all nations as far as it may lie with them to accomplish.

The sceptical may demur. Yet visionaries of the last century have been left far in the rear by the practical men of the present one. When Palmer proposed to establish mail-coaches at ten miles an hour, the velocity, if attainable, would, it was thought, bewilder the passengers; perhaps deprive them of breath. When Stephenson modestly hinted at a speed of twenty miles an hour for his steam-engine, there were not wanting those who thought he had lost his head. To paint by the sun—ridiculous! To signal instantaneously over a thousand miles—impossible! To speak in a friend's ear a hundred miles off; to run trains at sixty miles an hour—madness! compared with which Bedlam itself would be sanity.

Yet these things have come to pass, and science is still hovering with extended wings on the shore of an ocean of still greater marvels—of telegraphy without wires, of swift locomotion without horses or steam, of immunity from disease by simple preventive methods.

Not all who now administer postal processes may live to fulfil this programme; but they may at least so shape their action that as much as it is possible for the Post Office to accomplish for the happiness of mankind shall at least be attempted while they are here to lend their experienced aid.

PART II

SOCIAL AND ECONOMIC

ESSAY VII

THE PROGRESS OF THE LABOURING CLASSES

THE progress of a nation in civilisation is not to be measured by the improvement in the condition of any one class, and certainly not by the degree of refinement and luxury in the upper classes. It is largely, however, to be estimated by the condition of what are usually called the "masses;" that is to say, by the freedom, comfort, and general progress of the lower or labouring classes. There are still persons who speak of labour as a "commodity," and who do not hesitate to assert that capitalists and employers are within their right when they purchase that commodity as cheaply as possible, and turn it to the most profitable account. Thoughtful and humane employers, however, have always felt that when they avail themselves of the services of their humbler fellow-creatures the whole of their duty is not discharged by the payment of wages, and their greatest happiness is often attained when they secure for their work-people all the reasonable enjoyments which are suited to their condition. At no previous period in the world's history has there been such a general movement in this direction as during the present century, and Governments, as well as society generally, have striven to promote the material and intellectual welfare of the workers. Slavery in every form has ceased to be regarded as the normal condition of any section or family of the human race, and although some of the more advanced nations, such as the Portuguese, and even we ourselves, still sanction it in a modified form, giving as our excuse that it would be a mistake to abolish it too precipitately, this state of things is looked upon with great jealousy, closely watched by societies established for its repression, and is not

likely to be long tolerated. The general movement during the nineteenth century has been distinctly from servitude to complete emancipation. Serfdom was abolished in Prussia in 1807 through the instrumentality of the great Minister and statesman, Von Stein, whose patriotism and influence provoked the hostility of Napoleon to such a degree that he was forced to flee from his native land to Austria, and thence to Russia. In 1833 the slave-trade was abolished in this country through the exertions of Wilberforce, and our men-of-war now give chase to slavers in every sea, and, when they are able to do so, liberate the victims of greed and oppression. After a sanguinary internecine war, slavery was abolished in the United States under President Lincoln in 1863. The serfs were emancipated in Russia by Alexander II., and although her own people are still subjected to great oppression at the hands of the governing classes, Russia has accompanied her conquests in Central Asia by a general abolition of slavery in the conquered states.

In this country it is no longer a question of servitude in the ordinary sense, although in certain industries there is still much dependence of the employed upon the will of the employers; but we shall find that the condition of the labouring classes to-day, as compared with the beginning of the century, is one of remarkable freedom, ease, and enlightenment. In the country the labourers owe their emancipation and elevation largely to Joseph Arch, himself originally a farm labourer, and to-day a member of the Legislature. Seamen are indebted to Samuel Plimsoll, late M.P., for much of the consideration which has been extended to them; whilst in cities, mining districts, and seaports the trade unions have greatly contributed to the same end in the case of artisans, miners, and day labourers. The names of Macdonald, Burt, the Pickards, Howell, Broadhurst, Burnett, and recently that of John Burns, and many others, have been honourably connected with the movement.

There are two features of the labour question which force themselves upon the attention of those who study the subject with care—one, the superior efficiency of workmen of English race; the other, the steady rise in the wages of labour all over the civilised world. The first is not an experience of yesterday. In his interesting and useful work, "The Progress of the Nation," Porter, an eminent writer on industrial questions, said as far back as 1836:—

"Not only is the proportion of persons in the community who pass their lives in active industry, labouring with their hands or their heads, greater in this than in almost every other well-peopled country in

Europe, but the amount of skilled labour performed in a given time by any given number of our countrymen is commonly greater than that accomplished by the like number of any other people in Europe. To this circumstance it is in great part owing that, with a higher rate of daily wages paid for fewer hours of toil than are required in other countries, our manufacturers have been able, under otherwise adverse circumstances, to maintain the superiority over their rivals. Many of those rivals both in France and Germany have contrived to possess themselves of our best machines, notwithstanding the legal prohibition which, until lately, existed to their exportation, but having hitherto been unable to imbue their workmen with the degree of energy and skill by which the English artisan is distinguished, are in general unable to compete with us in any but the commoner kind of fabrics." *

If circumstances have changed since this was written, it has been to the disadvantage of our manufacturers. Not only is the exportation of our machinery not prohibited, but it is encouraged, and a single machine purchased in this country is often multiplied abroad to save expense. Protective duties are levied on the importation of our goods into foreign countries, whilst theirs are admitted free into ours in keen competition with our home industries; and yet, in most cases, we are able to hold our own in the markets of the world, and that largely through the superiority of our workpeople. Few unprejudiced persons will be inclined to doubt this, especially such as have seen men at work in foreign countries, but the following few figures, taken from trustworthy sources are, we think, conclusive:—

	Native Workmen required to work 1000 Spindles.
In Bombay	25
In Italy	13
In Alsace	9½
In Germany in 1861	20
„ 1882	8 to 9
In England in 1837	7
„ 1887	3

The *monthly* wages of cotton-spinners, weavers, and machine-makers in the following countries indicate in some

* As the author whose views are here given is frequently cited in these pages, a brief notice of him is desirable. G. R. Porter, F.R.S., Corr. Mem. Institute of France, was born in 1792, and died in 1853. He was connected with the Board of Trade, as head of the Statistical Department, and then as Secretary to the Board. His book quoted above, "The Progress of the Nation," deals with the social and economical condition of England from the beginning of this century. It was first published by Mr. Murray in four vols., from 1836 to 1846. In 1847 a second edition was published in one vol., 8vo., 846 pp. (it is from that edition that quotations are made in this treatise), and another in 1851, the statistics being brought down to each period. Although quaint in style, it is acknowledged to be correct in every way. It is long out of print, but may be purchased second-hand.

degree the higher rate in this country and the United States * :—

	Spinners and Weavers.	Mechanics.
In the government of Moscow the wages are:	£2 0 8	£3 10 0
„ England	6 4 4	6 13 6
„ Massachusetts	7 19 3	9 19 4

But with this must be coupled the average hours of labour, which are as follows :—

In the government of Moscow	284 hours
„ England	234 „
„ Massachusetts	255 „

Presently we shall have occasion to deal more fully with wages and hours of labour in different parts of the world; here we would only add that a glance at those conditions tends to confirm the view expressed by Porter in his day that English working-men, wherever they are found, are more efficient than those of any other nationality.

It may seem to some readers superfluous that they should be told that a rise in the wages of labour does not necessarily denote any improvement in the condition of the labourer; yet what is more common than to hear thoughtless or prejudiced people say, "The working-classes are much better off than formerly; just look at the increase in their wages"? When, however, it is found that, coupled with higher wages, there has been a shortening of hours, without any material increase in the cost of the necessaries of life, then it is safe to say that the conditions of labour have improved. And so we shall find it to be, if we compare distant periods in the century. Before doing so, however, it is necessary to add that in certain industries circumstances have arisen which have operated in the other direction, and it is questionable whether, for the time being, whole bodies of men have not retrograded. Amongst those are the introduction of labour-saving machinery, the substitution of iron for wood in many industries, and the dispensing with intermediate processes in others. On the whole, however, a comparison of distant dates shows an unmistakable improvement, and although we shall here confine ourselves to one trade, the building trade, the same rule applies, more or less, to every kind of skilled and unskilled labour. In England from 1825 to 1835 the wages in the building trade averaged 24s. per week of sixty-eight to seventy hours,

* We have given these figures as published in the Report of the Royal Commission on Labour (Russia, 1894), calculating the rouble, for convenience, at 3s. We think, however, that there must be a rather greater difference than is here stated between the wages of spinners and mechanics in this country.

whilst from 1890 to 1894 they were 34s. per week of about fifty hours. During the former period the cost of bread was 2d. per lb., of meat 3d. to 4d., whilst in recent years bread has cost 1d. per lb., and meat 6d. to 8d. In France the average wage in 1845 was 3 francs per day against 6 francs in 1895, and the cost of living has followed about the same course. In Germany the wages in 1833 ranged from 1 to 2 marks (shillings) per day; in 1870 from 2s. to 3s.; in 1895 from 3s. 6d. to 4s. Food has followed as above. In Belgium the wages in 1846 ranged from 1 franc 75 cents to 2 francs; in 1891 from 3 francs 75 cents to 4 francs; food following as above. In the three latter countries the working hours have shortened somewhat, but, owing to the absence of trade-union influence, not so much as in England.

In the United States there has been a similar advance in wages, but the extent of the country, and various exceptional conditions, make it more difficult to form a correct estimate at any particular period. In 1840 men were receiving $1.25 per day of ten hours, where they are now receiving $2.25 to $3. The normal working day is still ten hours, though in some trades it has been reduced to nine. The cost of living altogether has risen. Bread has risen 25 per cent. between the two periods, so also meat; certain articles of dress for the artisan class are cheaper, but house rent is very high.

In a letter to the writer, Colonel Carroll Wright, the Chief Commissioner of Labour at Washington, says:—"Wages in this country, taking the decades together, tend upwards constantly, as with you. The cost of living, on the whole, is on the decrease, although the important items of rent and meats are very high, and seem rather to increase than decrease."*

From this superficial comparison of the rates of wages at different periods in the century—a comparison which, as we have said, holds good in other industries, although for unity we have confined ourselves to one—it is quite clear that the material condition of the working classes has improved in an unmistakable degree, and various circumstances and agencies have led to this improvement. Amongst those, we find in Europe generally emigration; in the United States and new colonies, scarcity of labour; more recently, especially in this country, the action of trade unions; and in some Continental states, as Germany, Belgium, and France, the spread of social democracy, which has initiated and promoted a rise in wages and the curtailment of the hours of labour. Taking, first, emigration. The emigrants are usually sturdy and enter-

* Colonel Wright does not refer to the conditions at distant periods, as we have done.

prising workers who are dissatisfied with the conditions of life in the overcrowded fatherland, and who, taking away with them steady, hard-working wives and children, therefore withdraw from the Old World some of its most valuable denizens. The emigration from the United Kingdom between 1815 and 1894 inclusive reached the vast number of 13,988,088 individuals. It was only in 1853 that the distinction was drawn in the returns between British subjects and aliens, but from that year to 1894 inclusive 7,915,399 persons of British birth left our shores. The major part of this tide flowing westward was between the years 1881 and 1894, when more than four and a half millions emigrated from the United Kingdom. Many, of course, have returned, but the balance of emigration during the last twenty-five years is 4,604,333 persons. From Germany during the twenty-two years ending 1892 there were 2,204,432 emigrants, almost all to the United States, so that from the two countries over 8,000,000 of workers have recently left for other lands, whilst it must be presumed that those who returned were either unable or unwilling to follow any settled employment. The emigration of Scandinavians to the United States, which has been considerable, has swelled the tide, and whilst there has been an unlimited field for industry in the new countries the labourers in the old have benefited by the diminished competition.*

So much for emigration; but whilst the withdrawal from the ranks of labour in Europe must have exerted a marked effect upon the rate of wages and the length of the working day, there can be no doubt that, in this country especially, the most important factor has been the growth of trade unions. We say in this country, because it is here that they are the most completely organised and possess the largest means. The aims of the unions have been, on the whole, legitimate, and in many ways beneficial to the labouring classes, for the better class of unions have, besides a "Trade Fund," for the purpose of securing what they deem a just rise, or resisting an unjust fall in wages, an unemployment fund for members out of work, and benefit funds for sickness and accident, as well as a "Widows and Orphans' Fund" for the purpose which the name denotes. This latter fund is largely supported by employers and by many of the general public, even by persons who object to the fighting aims of the unions; and as it is fed by the proceeds of celebrations, such as concerts, &c., at which large employers and public men often preside, it has done much to create a friendly feeling between "the classes and the masses." A fair idea of the

* These data are taken from the English Emigration Returns, April 1895, for which our best thanks are due to the Department.

average expenditure of the unions upon their respective benefits may be found by reference to a table which was prepared by a leading labour authority in 1890,* from the published reports of ten of the leading unions for the preceding year. Those unions had a roll of 202,250 members in all, and their total expenditure on trade benefits was £22,250, whilst that on friendly benefits was £256,959, more than ten times the amount; and the total balance in hand at the end of 1889 was £499,918. In marked contrast with this was the year 1893, when nearly 640,000 persons were directly or indirectly affected by labour disputes. In that year 677 trade unions made returns to the Labour Department of the Board of Trade showing a total expenditure of £2,232,290, of which sum £724,854 (nearly one-third) was spent in "disputes," besides which a large sum was expended in the relief of those who were thrown out of employment, having no claim on the funds of the unions.† This state of things is, however, exceptional, although it must be admitted that a large balance in hand is often provocative of a trade dispute, as large standing armies are of war.

Although there had been trade contentions of one kind or another in this country during the whole of the eighteenth century, it may be said that the first *bonâ fide* trade union was the brushmakers' in 1778, which is still in existence. About the same time the bookbinders' union (also still existing) was formed, along with some others, and in 1809 the Society of Ironfounders was started. Such societies were, however, unlawful combinations—conspiracies, in fact—and "every movement for an alteration in the conditions of labour contributed its quota of trade union offenders to the common prison." ‡ These are the words of the leading authority on trade unions; and the same writer says, concerning the ironfounders' union: "A general secretary of this society, who lived to see the enfranchisement of the unions, has often declared that after lodge meetings, in the early days of the union, it was customary to bury the books until they were again required." So much for the condition and status of the unions at the beginning of the century, but even as late as the decade ending 1870 any one who ventured to approve of the existence of those unions, or even to encourage their provident funds by presiding at their meetings or charity balls, was branded as an extreme Socialist and an enemy of society. The present writer speaks from personal experience. Now, however, mayors and magistrates, and other public men, vie with one another for the honour of occupying the chair at

* Subjects of the Day, vol. ii. p. 115.
† These figures apply to the actual workers only, not to their families.
‡ Subjects of the Day, vol. ii. p. 108.

trades union celebrations, and politicians of the most Conservative type (however in their private capacity they may dislike them) speak of them as the solid foundation upon which the fabric of British industry rests. No doubt these unions are sometimes arbitrary in their dealings with their employers, and even with their own members, but not more so than the unions of trades and professions of a higher order. The chief fault of the older unions is really their conservatism; that is to say, their unwillingness to march with the times, a defect which has recently led to the rise of the "New Unionism," a combination of unskilled workmen which threatens to cause a disruption in the ranks of labour generally. Until recently every phase of politics was carefully excluded from trade unions,* but now there is not only the combination just noticed, but there are several political organisations, such as the Independent Labour Party, the Labour Electoral Association, and even the Trades Councils themselves, composed of delegates from the different unions. These are bringing forward their own "labour candidates" at municipal, parliamentary, and other elections. It is too early to predict the future of those associations, but there is every likelihood of their growing in strength, and on some emergency joining their ranks against the other political parties in the State.

At the present time the Government returns give the names and addresses of 687 registered and unregistered trade unions in the United Kingdom, and when it is stated that the membership of only twenty-one of those societies in England (certainly some of the leading ones) has increased from 174,820 persons in the year 1870 to 537,200 in 1894, and that in the latter year the total income of those unions was £1,148,501, the reader will be able to form some conception of their rapidly growing power.† The 687 unions now have an annual Congress; a "Parliamentary Committee" to watch over their interests through their direct representatives in Parliament, ten in number;‡ and during recent years they have secured nominees on benches of magistrates, boards of guardians, school boards, and on town councils, and as a rule those men are treated with proper respect and consideration.

As already stated, the trade unions, or combinations for material protection, are the most perfectly organised and influential in this country, but, in one way or another, the

* Or at least from their "Trades Councils," for in Liverpool and other places there have always been unions consisting almost entirely of men of one shade of politics; sometimes two unions of opposite politics in the same trade.

† The Scotch unions have grown in the same ratio.

‡ In the United States there are no direct labour representatives in the Legislature.

labouring classes are combining with the same object in almost every civilised land. In France the trade associations are called "syndicates," and in 1890 there were 877 syndicates of masters, 819 syndicates of workers, and 67 joint-syndicates. The men's syndicates are more stable and permanent than those of the employers, which are usually improvised to meet a strike or some emergency. Trade disputes in France are more frequently interlinked with politics than here, and there is much difference of opinion amongst the labouring classes themselves as to whether the syndicates and other labour organisations should or should not become political agencies. Although there is a family likeness between the features of labour agitation everywhere, the men's combinations in France have nothing like the same power of resistance or attack as the British unions, nor are they so well supported. As an example of this, there were about 10,000 house painters in Paris in the year 1890, of whom only about 400 subscribed to the "syndicate." If, however, the influence of the trade organisations in France is weak, the impetus given to labour movements during crises by socialistic and political agencies is much more marked than with us. This phase of labour agitation is still more prominent in Germany, where "social democracy" is generally at the back of all efforts to secure an increase of wages or a reduction of the hours of labour, and that is the reason assigned by the governing powers for employing repressive measures against the working classes. To what length those prosecutions, or, as many call them, persecutions, have been carried of late by the present Emperor and his advisers is well known. That rusty weapon of despotism, *lèse majesté*, has been unsheathed, and according to the chief Socialist organ, the *Vorwärts*, the total terms of imprisonment of Socialists (mostly editors and men of letters) during the month of October (1895) amounted to ten years and one month, accompanied by fines of 2941 marks (about £150). That these imprisonments and finings are calculated to have, in the long-run, precisely the opposite effect to the one intended is obvious to any but the most short-sighted politicians. Irrespective of this, however, there are in Germany many useful organisations of both employers and employed, some of the latter being confined to working people of particular religious denominations, Catholic and Protestant. In 1893 there were reported to be 10,223 "guilds" in Germany, with 321,219 members. The members are chiefly small employers (*kleine Meister*), but provision is made for the representation of artisans on joint-committees for the protection of the interests of both sexes. Men's trade unions were first started in 1868 by two public men, Dr. Hirsch and

Herr Duncker, and in 1869 there were 12 "Hirsch-Duncker" Unions, with 267 branches and about 3000 members, whilst in 1893 they numbered 1341 branches, with an aggregate of 61,034 members; the engineers and metal-workers have 403 branches, with 23,129 members. Compare this latter body with our trade union of Amalgamated Engineers, Society of Ironfounders, and of Boilermakers, with a joint-membership of 129,933, and some idea may be formed of the relative strength of the ironworkers in the two countries. Not included in the above is the Printers' Trade Union, which most nearly resembles our trade unions. It dates far back in history, but was settled on its present basis about the year 1866, and according to the last report it numbers about 13,000 members. Like our unions, it has a general fund and a sick and pension fund, which in 1890 amounted together to about £85,350.* As already stated, there are many other associations of men; but perhaps the most characteristic organisation is that of the employers, for carrying out the aims of the Legislature in regard to insurance against accidents, which will be referred to hereafter. Of the unions generally, even backed up as they are by political organisations and individual energy, it cannot be said that they compare in any way with those of Great Britain. This is proved by the length of the working day, which, with very few exceptions, ranges between ten and twelve hours, and in several localities extends even beyond that time. Strikes and demonstrations in favour of a nine, and even eight hours' day are frequent in Germany, but there appears little prospect at present of the former becoming the normal time, except in a few exhausting industries.†

The labour organisations of Belgium, like those of France and Germany, are closely allied to the Socialist movement, and they have had strikes not only for higher wages and shorter hours, but for universal suffrage. The strikes have been violent and widespread, and although wages are very low, the eight hours' agitation is beginning to strike root. This and allied movements have secured additional force through the international labour conferences, two international miners' conferences having been held in Belgium. ‡ Strikes and Socialism notwithstanding, the normal day still reaches ten to eleven hours, although there are a few special industries in which it is

* There is also a Master Printers' Association in Germany.

† The Report of the Royal Commission on Labour, 1893, vol. v. ("Germany"), p. 30, gives some interesting details relating to the hours of labour in various parts of the empire. These reports, as is well known, were ably prepared by Mr. Geoffrey Drage (now M.P.) after visiting the various countries.

‡ In 1884 the American "Knights of Labour" started in Belgium, and aided a strike of glass-blowers.

nine to ten. Certain Co-operative Societies have introduced the nine hours' day. In Switzerland, where State Socialism is gaining ground more rapidly than in other countries,* the unique feature is the existence of a Labour Committee and secretaries, the latter subsidised by the State. It is not, as with us and elsewhere, a Government department, but an independent Labour authority consisting of what we should call trade union delegates, and it appears to combine the operations of our Trades Union Congress with that of our "Chief Labour Correspondent." It is really a representative body consisting of delegates from the "Swiss Workmen's Federation," which in 1893 numbered about 200,000 members, and the object of the "Federation" is "to represent the collective economic interests of the Swiss working classes." The assembly of delegates takes place every three years, being the term of office of the State-endowed secretaries. The importance of the organisation may be judged from the fact that originally there was one Secretary, paid a salary of 5000 francs by the State, whilst there are now one for the Protestant and a second for the "Roman" cantons, with two assistants, and the State contributes 25,000 francs per annum. The working day in Switzerland is from ten to eleven hours, and although the eight hours' day is talked about, "it is not at present within the range of practical politics."

In Russia is to be found a most remarkable association of mediæval and modern methods in the organisation and working of labour unions—the old guild, side by side with unions worked in a semi-collectivist fashion. "In 1891 there were eight classes of artisans' guilds, each of which included members engaged in twenty-five different occupations. The guilds are widely extended throughout the towns; in St. Petersburg 60,000 persons, or one-eleventh of the whole population of the city, are enrolled in them." "The artisans are classified in three groups —master-workmen, journeymen, and apprentices." The first-named have to produce certificates of proficiency and good conduct; the others are more or less probationers. So far we have the old system of *Lehrjahre*, and are carried back to the Middle Ages. The guilds in Russia are wealthy, and have benefit societies associated with them. The members earn from £5, 5s. to £15 per month, and do an actual day's work of eleven hours. But a more interesting group of associations are the "Artels," unions of labourers, clerks, and members of the building trade. These Artels have also their roots in the

* Royal Commission on Labour, vol. vii. ("Switzerland"). The information there given on the authority of Mr. Scott, H.M. late Minister at Berne, is endorsed by the result of inquiries made by the writer.

Middle Ages, but they are now managed on a co-operative basis, and are divided under four main heads—societies for the performance of certain work, lending societies, distributive co-operative societies, and mutual insurance societies. The most important are those connected with "mining, agriculture, transport, and the manufacturing industries." * All the Artels possess the common characteristics that each member must perform an equal share of work and receive an equal share of the profit, and that the Artel as a whole is responsible for the work and conduct of each individual member, who is, in his turn, responsible to his Artel in case of loss or damage. Each member receives about £1 per month wage, and his share of the profits twice a year. The Artels have what we should call several funds; they call them "capitals"—a capital of reserve, one of guarantee, one of charity (sick fund), and a working capital; and their funds have to be lodged in the State banks. Amongst the numerous Artels, there are those of packers, porters, and railway Artels, which perform contract work for railway and other companies; country Artels, shepherds, post Artels for providing vehicles and horses, &c.; also permanent agricultural Artels, and others improvised for harvest or shepherds' duties, which are usually paid in kind. Factory Artels sometimes get possession by purchase of whole factories, and one in an iron foundry took over the business, and in four and a half years paid off all debts, taxes, &c., to the extent of £9400, and still retained a capital of £3050. "The general conduct of the Artelshiks is vastly superior to the ordinary Russian working man, who is sadly addicted to drink and idleness. The members of an Artel are always sure of a salary for a fixed period, which is not the case of a free labourer." We have no wish to disparage non-unionists and "free labourers," but any one who is acquainted with the different classes of workmen knows that this remark applies more or less to the labour of all civilised States. The condition of the Russian peasant is described by those who know the country as being very wretched. A table and bench around the log walls, no trace of bedding, the sheepskin or the woollen overcloth being taken off the shoulders to serve as a mattress, bedcloth, and blanket; even in the house of the "rich peasant" that is all the furniture of the *izba*. Nay, a piece of cotton or linen rag and a scrap of paper are a luxury which the doctor and midwife look in vain for in a peasant household. Food itself is often wanting. When it was stated in this country in 1891 that

* This information is taken from two interesting special reports on "Artels," Foreign Office, No. 372, 1895, and Labour Commission, "Russia," vol. x., 1894. They well deserve careful study as a phenomenal phase of the labour question.

each £1 subscribed to the famine relief fund would sustain an adult for eight months, till the next crop, the statement was met with incredulity. But this is really what the peasant lives upon for twelve months "in ordinary times, . . . so that chronic starvation," as Tolstoi wrote, "is the real normal condition of the great bulk of the Russian peasants."

So much of our space has been devoted to the consideration of labour organisations in Europe that we can only dwell for a brief space upon those of the United States. If the trade unions of America did not actually grow out of those of the old country, it was thence that they derived their inspiration. The presence in the States of a great number of distinct nationalities, often keen competitors for labour, native Americans, Irish, Chinese, Germans, and Scandinavians, to say nothing of the coloured race, naturally checked the growth of working men's combinations, and although such organisations are mentioned in works on the subject published in America, commencing as far back as 1724, the writer of these lines found, when he visited the country in 1879, largely with a view to study the labour problem there, that the trade unions possessed very little influence, and were hardly regarded as a serious factor in the labour question. The unions sprang into existence about the year 1859 or 1860; the "brotherhood" of carpenters and joiners started in 1881; the railway brakesmen in 1884; the bakers in 1886; and although a large number exist at present, the statistics of the unions show that their real strength is small as compared with ours, a statement which is borne out by the fact that the normal length of the working day is ten hours in almost every case where it is nine hours (with a tendency towards eight) in this country. In the United States, on the other hand, political influences have helped to consolidate the union of various trades, and the "Federation of Labour" (started in 1886), the "Knights of Labour," which has been in keen antagonism with the former, and the American Railway Union are illustrations of that relation. Others with high-sounding titles, characteristic—we hope we shall be pardoned for saying so—characteristic of Brother Jonathan, such as "The Sovereigns of Labour" (a curious title for a body of Republicans), "The Industrial Brotherhood of the United States," both secret societies in their day, have either gone down or merged into later organisations.*

* The titles of the officers of existing organisations, too, are grandiloquent. In an account of a threatened split amongst the "Knights of Labour," one section accusing the officers of the other of misappropriation of funds, we read of "General Master Workman" and "General Worthy Foreman," titles such as we hear of in connection with some of our large benefit societies, but which are not to be found in our *bonâ fide* trade unions.

According to the Chief Commissioner of Labour, Colonel Carroll Wright, the "Knights of Labour" reckon 150,000 members, the American "Federation of Labour" 500,000, and the Railway Union 150,000; together, therefore, 800,000 members. Colonel Wright considers that out of 4,712,622 persons employed in manufacturing and mechanical industries, about 1,400,000, or 29.71 per cent., are in union. The voluminous returns, however, give little or no detailed information regarding those vast bodies of men, and nothing seems to be published concerning their revenues or expenditure, a strange contrast with the accurate printed returns of all our large unions, twenty-one of which (out of a total of 687) number over half a million, and have an annual income of about £1,150,000. Although it is impossible to form a correct estimate of the strength of their organisations, a man of close observation and long experience, like the Chief Commissioner of Labour at Washington, is able to judge fairly of the general condition of the labouring classes of his country, and the following remarks, communicated to the writer, may be taken as a faithful *résumé*:—

"Taking the past fourteen years up to the middle of last year, strikes have been on the increase in this country; the two most typical years as to figures are 1886 and the year ending July 1894. During the past twelve months, I think, strikes have been on the decrease. . . . Until the recent industrial depression wages have been steadily on the increase, and in the course of a year they will be back where they were two and a half years ago. . . . Wages are higher than when Protection became the national policy. . . . The extension of the Socialistic idea has not seemed to affect wages in the least. . . . I consider, taking it all round, that the workers in America rank higher in civilisation than in the Old World. . . . Here and there you can find instances where workers in the Old World rank as high as American workers, but not taking it all round."

In his estimate of the relative civilisation of workers in America and the Old World, the Commissioner is a little too general, for there is a far greater difference between the workers in different European countries than between the worst of our English workers and the best in the States. Looking, too, at the relative cost of certain items of expenditure, other than "rent and meats," we think he has considerably understated the disadvantages under which the American workman labours. His own and other returns show that, owing to competition in labour and the high price of living, it is difficult for workmen in some industries "to make both ends meet." These remarks are not prompted by mistaken patriotism, for we believe that the workman of the United States enjoys greater comforts than ours; and that before the spread of science instruction (which is not so far

advanced in the States as here), he may be said to have been better educated. As a rule he is more temperate, and thereby saves money for wiser expenditure.

Perhaps the most faithful outline of the state of the labour question in the United States is the one given by Mr. Keir Hardie (ex-M.P.) on his return from that country.* Of the material condition of the working classes he says: "Wages in most cases, not all, are higher in America, but it costs more to live, and whilst the standard of living is higher, there are more solid home comforts on this side of the Atlantic. . . . The trade union movement is not nearly so well consolidated as at home. . . . Many of the trade union leaders are party politicians. . . . The Socialist movement as an organised force is not yet much of a power, save in New York. . . . Everything points to a rapid development of the Socialist movement in the States. An ugly feeling towards the rebellion is being engendered by the growth of the great monopolists, who are driving the small employer and shopkeeper out of business, corrupting the Legislature, silencing the Press and Pulpit, and reducing the workman to a position of helpless, abject dependence." No wonder, then, that he says of the working classes in England as compared with the same class in the United States, "Strange as it may appear, there is more personal freedom."

By some readers this account of the material condition and organisations of the labouring classes in various parts of the civilised world may have appeared tedious, especially as all conclusions must be based more or less upon statistics, whilst others who are deeply interested in the subject will call it superficial. But it must be remembered that when we are treating of the organisations of labour we are only dealing with a section of the working classes, and, as a very able writer pointed out, what we have to look at in this portion of our subject is "the movement all along the line of serious action and serious thought for the betterment of the condition of the masses of the people." † It is to the results of this serious action and thought that we must now turn our attention; to the establishment and constitution of boards of conciliation in labour disputes; provision of work for the unemployed and starving; amelioration of the condition of women; protection of children; co-operative distribution and production, and profit-sharing, and employment of labour-saving machinery; most, if not all, of which we believe we are right in saying are births of the latter half of the present century.‡

* *Labour Annual*, 1896; London, "Clarion" (Ltd.).

† Mr. Fletcher, former editor of the London *Daily Chronicle*.

‡ In order to avoid burdening our essay with too many figures, an appendix has been added, showing, as far as we are able, and subject to fluctuations, the wages, hours, and cost of living in various parts of the world at the present time.

ESSAY VIII

CAPITAL AND LABOUR—BOARDS OF CONCILIATION AND ARBITRATION

If we revert for a few moments to the question of the organisations of labour, we find that those have naturally been materially affected of late years by similar combinations on the part of employers; also, in a lesser degree, by what are usually known as "free labour associations"—bodies of men who, for some reason or other, have been opposed to the trade unions. These associations have rarely been of long duration, and, excepting for a short period during a strike (especially where the unions have been unjust and arbitrary), they have seldom secured much support from their own class. Employers of labour have, however, not been slow to avail themselves of their help, and some of the so-called "free labour associations" have undoubtedly been started and maintained by employers as a weapon with which to fight the unions.* The associations of employers are almost, if not entirely, secret societies, in this country at least, publishing reports only for their own members. According to the last returns there were about 400 such societies, of which 93 belonged to the building trade, 79 to metal and mining, 53 clothing, and 68 to farming industries. They have undoubtedly a useful influence in regulating the conditions of labour and in moderating the action of trade unions; indeed, no one who has watched or taken part in the labour movement since the unions of the men were recognised by law will be disposed to deny that in trades where there is a good employers' association and a well-managed union of the men there the relations of the two are placed on the most satisfactory footing. From the intercourse of these two sets of associations have sprung up boards of arbitration and conciliation in various parts of the world, and it is to these that we shall now direct our attention for a brief space. France may be said

* This has been proved in one or two cases where the financial statements of "free labour associations" have oozed out, when it was found that a great portion of the maintenance funds had been provided by employers, or their known advocates.

to have been the cradle of this movement, for it was there that councils were first established, in 1806, under the title of *Conseils des Prud'hommes.* From those there has developed a great system, which spreads its branches over the whole civilised world. Although in France there is still some reluctance to refer labour disputes to arbitration, more than half were so settled in the year 1894. Still, the number of strikes there, as almost everywhere else, is far too great, and there is usually, and naturally, a considerable increase during prosperous years, when the men feel that they are entitled to a larger share in the profits of their employers.

In 1874	there were	21 strikes
„ 1884	„	89 „
„ 1890	„	313 „
„ 1893	„	634 „

whilst in 1894 the number had fallen to 390. The number of persons affected by the strikes has risen and fallen in proportion. Concerning the action of the local and central authorities in connection with these trade disputes something will be said hereafter. In Belgium, a country greatly subject to labour disputes on account of the abnormally low wages, courts of conciliation have of late been very active, the most recently established being known as "Councils of Industry and Labour." There, as elsewhere, they are composed of an equal number of employers and employed, and their intervention has often been very successful in averting or terminating strikes, and consequently saving much misery and distress. Those councils are now established in fifty different districts, and they are frequently consulted by the Government on matters in which labour is concerned.

In Austria the factory inspectors act largely as arbitrators, an example which might with advantage be followed to some extent in this country, inasmuch as they are better acquainted with the relations of labour and capital than any other persons outside the unions themselves. In Germany the pacific settlement of trade disputes is making rapid progress. Great efforts have been made for many years past, chiefly by philanthropic persons residing in the manufacturing districts, to introduce voluntary boards of conciliation; but, irrespective of these, for one class of labour disputes, namely, concerning injuries to workmen, Germany possesses the most perfect and equitable system to be found anywhere. Syndicates of employers (*Berufsgenossenschaften*) have been established, whose duty it is to decide whether and what compensation should be made in cases of injury to men during their work. From the decision

of those syndicates (which have regular paid officials) appeals lie first to a Court of First Instance, composed of an equal number of employers and employed, and finally to a court sitting in Berlin, which consisted of a president, with four assessors, two from each side. The court of final appeal has recently been transferred to the State Insurance Office.

In 1889 the total claims of workmen for injuries to the person throughout Germany amounted to . . .	173,106
Of those the employers' syndicate settled . . .	31,439
Appeals to the Court of First Instance	11,225
Appeals to the then existing highest court . . .	2,010

We speak of the "then existing" highest court, because since the year named laws have been passed which have to some extent altered the constitution and methods of procedure in the courts, but the principle remains the same, and one wholesome regulation is, that the contending parties may not be represented by counsel.*

In the United States a great impulse was given to the courts of conciliation by the State of Pennsylvania in the year 1879, after a special commission had been sent to Europe to study the question. In Massachusetts and New York there are boards which have the power to intervene in labour disputes, and such is the moral force which their position gives them that it is said they frequently almost compel a reference to arbitration. The sum total of the movement may, however, be best gathered from the following sentence in the communication, already referred to, from the Chief Labour Commissioner to the writer:—"Boards of conciliation and arbitration are on the increase, and their functions are increasing—very slowly, however."

In Great Britain many attempts have been made to settle labour disputes by legislative enactments, but with so little effect that it is hardly necessary to mention them. On the one hand, employers as well as employed object to compulsory arbitration, whilst those who are innocent sufferers by strikes, as well as the general public, declare that until arbitration is enforced by Act of Parliament it will fail to secure industrial peace. There are at the present time three Bills before Parliament with this object, but none that is likely to be carried will have effective compulsory powers.

The general and unofficial progress of the movement has been more decided. Mr. Mundella, M.P., former President of the Board of Trade, may be said to be the father of industrial arbitration in this country, for he started the first important

* The writer's reason for referring to the period named—1889—is because he carefully followed the proceedings and attended the courts himself.

board in 1860, in the Nottingham lace trade. Since then, down to the present time, although there have been many disastrous strikes, trade disputes have been in the vast majority of cases settled either by independent tribunals, extemporised for the purpose by individuals in whom both sides have confidence, or, far more frequently, through the operation of the arbitration clause, which finds a place in the rules of every well-regulated union, or joint set of trade rules. This clause provides for the appointment of three or six workmen arbitrators, a like number being chosen by the employers from their body, and, in case of final disagreement, it is customary to enlist the services of an umpire from outside, whose decisions are usually loyally accepted. The number of disputes which are privately arranged, sometimes with the silent acquiescence of several branches of the same trade, makes it impossible to obtain complete statistics, but a cursory glance at those which have been published by the Board of Trade establishes two facts: first, that the number of disputes settled by outside agencies is still insignificant; and secondly, that the number of boards of conciliation and arbitration is increasing slowly. The number settled in that manner, either by boards or by private individuals, was—

In 1892	24,	affecting	123,781 persons
„ 1893	25,	„	312,009* „
„ 1894	39,	„	16,938 „

But the total number of disputes reported in 1894 was 962, affecting 308,350 persons. In the case of disputes which have become so serious as to affect various classes of the community, or where blood has been shed, or the fear of riot has existed, the highest officers of the State have been solicited to act as arbitrators by both parties to the dispute. In one case the Secretary for Foreign Affairs, Lord Rosebery, and in another (on the nomination of Mr. Speaker Peel, who had been requested to act) Lord Shand, a member of the Judicial Committee of the Privy Council, succeeded in settling two of the most far-reaching labour disputes that have ever occurred in this country. Applications have also been recently made in the same sense to the Board of Trade, and have been referred by the Board to individuals—Mr. Mundella, Lord Davey, Sir Wm. Markby, and Sir Courtney Boyle (a Board of Trade official). There are dangers as well as advantages in this mode of settlement. It gives importance, in their own eyes and those of others, to the

* The explanation of the large number of persons involved in the disputes of 1892–3 is, that in these years there were coal strikes, the total number of workers idle in these years being 356,799 and 636,386 respectively.

officials of the trade unions if they can rub shoulders with and throw the responsibility of settlement on a peer or great officer of State, and some of them are tempted on that account to recommend strikes, in the certainty that if they are only sufficiently grave the authorities will be induced to interfere. The same applies to the officials of the masters' associations. Another drawback is the temptation to partisans in high places to use these emergencies for party ends.

In France an attempt was recently made by a Socialist deputy to secure the services of the President of the Chamber, M. Brisson, in the Carmaux glass-blowers' strike; but, whether it was because he knew the Government was about to fall, an event which happened on the following day, or for some other reason, he refused to act.

Although the clergy generally have discoursed in a very amusing way about trade unions, of which they seem but yesterday to have discovered the existence, there are ministers of religion, some of high standing, whose intervention in trade disputes has exerted a moderating influence. Prominent amongst these is the Bishop of Durham, who interfered actively to prevent strikes and lock-outs; and at a meeting recently held at Seaham, he spoke of the Coal Conciliation Board as "the highest of conciliation yet adopted in England or elsewhere," and strongly advocated the formation of such boards throughout the land. Again, the Dean of Ely, who has always taken a practical interest in the welfare of the labouring classes, finds a remedy for trade disputes in the foundation for each trade of a representative council, elected in every important industrial centre by both masters and men, on the democratic basis of equality. As a rule, however, ministers of religion are not the wisest counsellors in such matters. Some are heated partisans, and all are more or less ignorant of the underlying causes of trade disputes, and of the technical matters involved.

Although there is still too great a disposition to resort to strikes and lock-outs for the settlement of trade disputes, it may safely be affirmed that the good sense of all civilised nations is at length asserting itself in the matter, and that such ruinous expedients for the settlement of industrial differences is not likely to be of long continuance. Would that the same could be said of all disputes between civilised peoples!

ESSAY IX

CO-OPERATION (DISTRIBUTIVE AND PRODUCTIVE), AND OTHER MOVEMENTS AFFECTING LABOUR

It would not be possible, even if it were within the scope of this treatise, to deal at length with the various attempts, more or less successful, which have been made in different countries to establish and carry on industrial enterprises on Socialistic or collectivist principles. For such information the reader is referred to numerous works which have been published both at home and abroad. The first important treatise, on profit-sharing, a thoroughly practical work, the result of ten years' observation and inquiry, was that of Dr. Victor Böhmert, a Swiss savant, which was published in 1878 in Leipzig.* The author there describes with care and minuteness the operations of 120 profit-sharing firms, of which 54 were in Germany, 25 in Switzerland, 17 in France, 10 in England, and the remaining 14 in Belgium, Austria, Denmark, Norway, Sweden, Russia, Italy, and America. It does not follow, as he says, that those were the whole of the profit-sharing establishments which were in existence at that time, nor that it was the proportion of such undertakings in the respective countries named, for his proximity to the first three naturally brought him more ample and trustworthy information from those than from more distant countries; but here we have the established fact that about twenty to twenty-five years since there were already in existence 120 considerable profit-sharing concerns. Of these, 37 were in the textile, paper, and leather trades; 14 in the building trade; 13 in farming, and 13 in metal-working. There were three definite methods of profit-sharing—participation in profits with a share in the property of the concern; the same without such accompaniment; and various contributions to the regular earnings of the workers by bonuses, assurance premiums, &c., &c. Amongst the prominent practical supporters of the movement special mention is

* *Die Gewinnbetheiligung*, Leipzig, 1878. The same author had published a work on employer and employed—*Vortrag über das Verhältniss von Arbeiter und Arbeitgeber*—at Zürich in 1868.

made of John Crossley & Sons, carpet manufacturers, Halifax (1864); Henry Briggs, Son, & Co., collieries, Normanton (1865); Fox, Head, & Co., rolling mills, Newport, Yorkshire; Greenings, wire-drawers, Salford; and some others in England.* In France, Leclaire, house painter, who began the system as far back as 1842; Laroche Joubert, Chaix, the printers, still a great profit-sharing establishment, and others are referred to; whilst Borchert, Demmler, and Von Thünen (agriculturist) are amongst those in Germany. The works of able writers, such as Charles Robert in Paris, Fawcett and others in this country, Von der Golz in Germany, are also noted; but, as already stated, that of the author himself is by far the most valuable practical contribution to the early history of profit-sharing and co-operation.†

In our day profit-sharing has preserved much the same features as those named by Böhmert, with some new additions. The co-operative distributive societies are becoming producers; thus, the "Co-operative Wholesale," which was started to supply retail co-operative societies, and, as they themselves put it, "to dispense with the services of all unnecessary and profit-making agencies between the consumers of commodities and their producers, . . . to economise the cost of living, . . . and to remove all temptations to adulteration, and every other form of cheating," now manufactures many of the articles which it vends. It has not only an extensive organisation for buying and selling in different countries (including six steamships, which do not appear to have been very profitable), but it manufactures boots and shoes at Leicester and Heckmondwike, soap at Durham and on the bank of the Manchester Ship Canal, woollen clothes at Batley, and sweets, preserves, &c., at Crumpsall. Other societies are following suit. One at Leeds possesses a corn-mill, and employs there and in its other factories 25 millers, 68 boot-makers, 75 men in the building trade (it builds houses for its members), 17 tailors, 12 bakers, &c. But an able writer, who read a paper on "Co-operative Production" at the Plymouth Congress in 1886,‡ asked the significant question, "Have they" (the producing societies) "helped forward the cause of the labourer, . . . or have they left him just where he was, on the old system of masters and workmen, the societies taking the place of masters and the workmen that of 'hands'?" This inquiry, made nearly ten years since, can hardly be answered satisfactorily to-day. There is a whole library of co-operative literature, but neither there, nor in the reports of societies, nor yet in the Government report on "Gain-sharing," does there

* Including one of which the present writer was the senior partner.

† Dr. Böhmert's work also deals with other industrial organisations of his day in various countries; he even refers to the Artels of Russia, already described here.

‡ Mr. W. Swallow of Leeds.

appear to be any reference to participation in profits by the workers. Indeed, during a recent Co-operative "Congress," over which the writer presided, many questions were asked concerning the rate of wages paid by the "co-ops.," as they are called, which implied a doubt as to the fairness of some of them. Without going into particulars, however, it is safe to say of all co-operative societies that their chief aim is to benefit their members, and that joint-stock production is one of the means employed. Profit-sharing with workmen is chiefly practised by ordinary trading companies and individual firms.

The statistics published by our Labour Department in regard to profit-sharing in this country are necessarily very imperfect, as many employers allow their workpeople to participate without publishing the fact, but according to the last report * there have been 159 such schemes started since 1829, of which 98 are still in existence, employing 28,459 persons. Of these, nearly one-half, so far as the number of employees is concerned, are found in about equal proportions in three industries, printing and publishing, engineering, and gas manufacture; the remainder covering nearly every other important branch of industry. Of those which have been closed (61), the greater proportion failed, *qua* profit-sharing firms, from the dissatisfaction of one side or the other; and the movement must be considered in its infancy. Still, the prospects are not discouraging, for most of the existing profit-sharing firms are of recent date, 54 having been started between the years of 1889 and 1892. The addition to the regular wages where a bonus has been given by existing firms has averaged 6 per cent., but we are not told whether the wages were the standard wages of the trade; and even if they were, the "profit" shared does not appear to be very substantial. No doubt the trade unions will say, "We can do better than that for you," and it is not to be wondered at that, as a rule, they have been unfavourable to "profit-sharing," which, in one way or another, is usually based upon extra-efficiency in working. They look upon it as an attempt by employers to evade the payment of the minimum rate of wages for which the unions have fought so strenuously. The amalgamated engineers have openly avowed their hostility to what they call "those plausible and specious schemes . . . until some more general principle of co-operation shall be acknowledged . . . where every man shall be guaranteed the full enjoyment of the produce of his

* Second Annual Report of the Labour Department of the Board of Trade (1894-5), with abstract of "Labour Statistics." The above remarks must not be taken to mean that the reports generally are imperfect. They are as a rule very trustworthy and explicit.

labour." We shall have an opportunity of further considering this aspect of the question before concluding, and must now inquire what progress has been made in other countries. In Germany, according to the Report of the Labour Commission, the actual conduct of a producing industry by the members in common has, so far, "had but an inconsiderable development," and "is rather a matter of the future than of the past." So, also, in Switzerland, where Böhmert mentioned fourteen producing societies in 1872, whilst M. Lavollée, writing in 1883, had no increase to record, there are only about sixteen to-day. In his recent work, Colonel Carroll Wright, of Washington, hardly if at all refers to any form of co-operative production, and in a communication to the present writer he says, "The attempts at productive co-operation in this country have been usually failures, and distributive co-operation only successful in a sporadic way."

In France, although the movement is even there unimportant and the obstacles very irritating to those who desire to see it developed, there are one or two establishments upon whose operations it is worth dwelling for a few moments. One is the printing firm of Chaix in Paris, a joint-stock undertaking of long standing, where, without any abatement of the standard wages, the profits are divided in the proportion of 85 per cent. to the shareholders and 15 per cent. to all the employees—namely, 5 per cent. in cash, 5 per cent. to the workmen's friendly society, and 5 per cent. to a reserve fund for superannuation at the age of fifty years.* The other is the well-known Familistère at Guise, originally founded by Godin, and now carried on as Dequenne & Co., after the manager, M. Dequenne. This is as near an approach to a communistic institution as can be found anywhere, but the management and distribution of profits are complicated. The firm manufactures stoves, kitchen utensils, and hardware of various kinds, and the profits are considered to be fairly divided between capital and labour. First, about 50 per cent. is reserved for depreciation; of the remainder, the manager receives, besides a salary of 15,000 francs, 4 per cent.; the "managing council," 10 per cent.; the "council of surveillance," 6 per cent.; 2 per cent. to "exceptional workers;" and 10 per cent. for scholarships. The balance is divided in the proportion of 1 franc to labour and 1 franc to capital. According to the published report before us, the total wages paid was 1,740,430 francs to 1237 workers, and the additional profit was distributed according to length of service and other conditions. Connected with the establishment there are three large buildings capable of housing 1800 people, each family renting two or three rooms, said to be

* So it was in 1890, when the writer visited the establishment.

crowded, and also many agencies for intellectual and educational progress. It may be that it is not fair to judge any institution upon a report, especially one that has enjoyed such a reputation as the Familistère, but it is safe to say that, although it seems fair to the employees, there is many a large manufacturing concern in this country where the employer would be thankful for a similar return on this capital, and the same pay for management, and where the employees enjoy the same privileges and emoluments, under other, and perhaps more certain, conditions of labour.

However, the foregoing data must serve to convey to the reader some idea of a growing movement, which, some think, will in time revolutionise industries and put an end to the strife between labour and capital. And now it will be necessary to say a few words on the other form of co-operation, namely, the distributive, which has gained a firm hold on society; for it is only from the joint consideration of the two that we are able to estimate their influence upon the present and future condition of the masses of the people.

The first co-operative store was started a century ago—that is to say, in 1794—by Bishop Barrington, in Mongewell, a small village in Oxfordshire, where provisions were sold at cost price, and a pauper was installed as manager at one shilling per week! From that insignificant beginning there has sprung, as there often does from apparently unimportant events, a system which has not only spread its ramifications throughout the British Isles, but which has grown so rapidly in every part of the civilised world as to justify and necessitate international congresses composed of delegates of various nationalities. In this country the Co-operative Union possesses 1700 "stores," having a total membership of 1,343,000 persons, a share capital of 18½ millions, and a reserve of over £800,000. In 1894 the sales amounted to 50 millions and the profits to 5 millions of pounds, besides the sum of £38,000 which had been devoted to education, and about £17,500 to charity. "In the store movement," said one of the speakers at a recent International Congress, "they had been making money, but the greater aim should be the making of strong, self-reliant men and women." At that same Congress a similar tone pervaded the speeches of leading co-operators from all parts—from the United States, Holland, France, Italy, Saxony, Belgium, &c.; and amongst the speakers were the veterans, if not the founders of the great movement, George Jacob Holyoake, M. Robert of Paris, Böhmert, and many more; whilst statesmen of high repute, such as Lord Brassey, Lord Grey, Mr. Bryce, and others, were amongst

those who were there to give it support and encouragement. But whilst co-operative distribution was reported as being more or less successful everywhere, the tone in regard to co-operative production was far from hopeful, and this is the place to consider briefly not only the cause of the slow progress of co-operative producing societies, but also those characteristics of the labouring classes which make it more probable that they will for some time to come remain wage-earners than that they should in the aggregate, or even in considerable numbers, become their own employers. The reasons are manifold, but reference need here be made only to a few of the more cogent.

One is the want of thrift, which prevents working men from accumulating capital sufficient to enable them to carry on independent enterprises.* But it does more than that. Any one who has had extensive dealings with workpeople knows that, with a large proportion of them, the thought of insuring their lives for the benefit of their wives and children is never entertained, but that they rely upon the charitable feelings of their employers to provide for their survivors. Many, too, are unwilling to forego even small present enjoyments to secure future benefits, such as provision for old age. Another obstacle to their becoming their own employers, and one for which they are not to blame, is that they have little time to acquire habits of business; consequently they are obliged to trust to salaried managers for the conduct of any undertaking in which they may be interested. If these are good for anything, they soon accumulate sufficient capital to carry on business and amass a fortune on their own account; if they are not capable the concern goes to the wall, and it would have been better for the workmen to have remained simple wage-earners. And this difficulty is exaggerated by the jealousy of the labouring classes of each other, and their parsimony in dealing with those who have charge of their interests. To some extent the co-operative distributing societies are providing the remedy for these shortcomings by teaching men thrift and educating them in business habits, but then those societies are at present managed by other than artisans—by clerks and men of that order. The trade unions are undoubtedly the best agencies for preparing the actual labouring classes to become co-operative producers, but, as we have seen in the case of profit-sharing, they hold rather tenaciously to their present function of maintaining fair wages for their members.

* This statement may be met by a reference to the accumulations in savings banks. It is true that the statistics of such banks (Government and trustees') show that the number of "accounts open" has risen from about 5,300,000 in 1886 to about 7,220,000 in 1893; but how many of these are shopkeepers, clerks, women, and children?

There can be no doubt that "Socialism" has much to say for itself. Whatever they may declare during periods of contention with their workmen, the employers of labour must know that they have in the past received a larger share of the profits of industry than they were entitled to, and, to use an electioneering expression, the labouring classes are justified "by all legitimate means" to increase their share—but it must be accompanied by increased thrift and sobriety. Again, there is little doubt that many industries which supply requisites in use by every one will devolve more and more upon municipalities or the State. To those already so managed there may probably be added railways, the manufacture and distribution of bread, meat, &c.; but "collectivism," or the "capturing of the implements of industry" by some organisation, which would put an end to all private enterprise, is yet far out of the range of practical politics, if ever such an undesirable end should be reached. The attempts on the part of zealous social reformers to force on such a change can only lead to estrangement between employer and employed, and to such a reaction, from time to time, as has recently taken place in the Legislature and government of this country; attempts which defer real reforms and practical efforts to raise the status of the labouring classes to Utopian schemes which rarely get beyond works of fiction or platform oratory and the denunciation of "grasping capitalists." It cannot be denied, however, that Socialism, in its widest sense, is making rapid progress in every part of the civilised world, and is there more violent where it is met by repression and despotism.*

Fortunately, however, that is not the case in this country. The great mass of our workpeople, and those who are closely associated with them, know when they are well off. The vast majority of them are happy, and many deeply interested in their vocations, and if we hear from time to time of feuds between employer and employed, we are not made acquainted with the kindly relations existing in many quarters. So the average "British workman" can afford to consider the future without haste or apprehension, and he need not be told that,

* Of this fact there could not possibly be a better illustration than in the concourse of men of various nationalities who gathered round the remains of the great Russian refugee Stepniak, who was accidentally killed at a railway-crossing near London in December last (1895). Not only was he eulogised as a patriot and able litterateur by Socialist leaders of every nationality, but also by the leader of the Liberal rank and file of this country (Dr. Spence Watson, President of the Liberal Federation and head of the society calling itself the "Friends of Russian Independence"). Coupled with this "demonstration," the circumstance that the Duke of Westminster, a man professing political views diametrically opposed to those of Dr. Spence Watson, was at the same time ardently espousing the cause of the cruelly oppressed Armenians, proves conclusively that England is still the sanctuary of the political refugee and the champion of oppressed nationalities.

whilst it is easy for doctrinaires and impecunious or over-sanguine reformers to create a "perfect State" out of their fertile imaginations, the labour problem is slow and difficult of solution. The unions of workmen are being met by increasing unanimity on the part of employers. In this strife the latter are helped by their customers in allowing the insertion of strike clauses in their contracts, by the power of the purse, the dissensions and jealousies, and in some instances by the servility, of the workers. They have a silent but growing arm on their side in the introduction of labour-saving machinery, which is invading every province of industry. It raises a ton of clay in a railway cutting in a minute; it bores rocks for mining and engineering; it loads and unloads cargoes, and disposes of them on shore; it rivets iron plates, and handles them with human care and superhuman power; it ploughs, reaps, sows, and winnows; it sets up and distributes type; it sews and knits, makes all kinds of clothing, and performs hundreds of other operations hitherto executed by skilled and unskilled labour. But even that is not an unmixed evil, if it be not a power for good. Whilst this wonderful revolution in almost all industries is throwing numbers of workers out of employ for the time being, it is, on the other hand, facilitating the attainment of shorter hours for the highest class of artisans, giving them more time for self-culture, and is generally dispensing with some of the more brutalising employments which men, ay, and women, have been forced to follow to secure a livelihood.

No, no! there is no royal road to a perfect state of society. In other ways than in retribution "the mills of God grind slowly," and all we can look forward to at present is, that the struggles of the masses to raise themselves materially and intellectually will be mitigated as far as possible by those for whom they labour, and have laboured since mankind became divided into classes. That this change has made considerable progress during the latter half of this century, and that it is likely to continue, is evidenced not only by the, strictly speaking, industrial reforms which have been referred to in the preceding pages, but by those disinterested philanthropic movements which have for their aim the attainment of happiness not for one privileged order, but for all classes of society, even the humblest and the most degraded. This is true "Socialism," which does not conflict with, but goes hand-in-hand with "individualism," and renders the highest service to order and civilisation.

ESSAY X

UNEMPLOYMENT AND ITS PROPOSED REMEDIES

Of the many problems presented by the labour question, none is of more fundamental importance or so difficult of solution as that now generally spoken of as "irregularity of employment."

As society is at present constituted there must always be found in it a greater or lesser proportion of people who want to work for a living, but are unable from various causes to find work to do. Under simpler conditions of existence want of work was a difficulty which seldom arose, as we now understand it, and laws were enacted which made idleness a penal offence. With increase of population, however, the progress of invention, and the organisation of industry upon the largest scale, new conditions have arisen in which the individual is comparatively powerless to make sure of even the humblest occupation in life.

Want of employment, if not the chief, is certainly one of the principal causes of poverty. There are other causes of social misery which are more or less under the control of the individual, but in nearly all cases in which persons or families suffer from want of work, the suffering arises from causes beyond their own control, and they are entitled to the sympathy and material help of the community.

It is, in fact, this responsibility of the community for its poorer members that makes the problem one of the largest human interest, and which has of recent years caused it to assume a wider importance than ever it has done before. In simpler times the private charity of the public and the distributions of religious communities did all that was required for the relief of the poor, but the gradual increase of population, the centralisation of large numbers in the towns, the development of invention and of great industries, rendered it necessary that the State itself should deal with the vast masses of the people who from time to time were unable, from want of work or from other causes, to find the means of subsistence. This

originated the Poor Law, a system having its first beginning in the reign of Queen Elizabeth, but, after passing through many changes, finding its fullest manifestation in the Poor Law Amendment Act of 1834, although this, again, has been repeatedly altered and modified by later enactments.

In addition to the Poor Law there have always been numerous voluntary agencies for the relief of distress, but it has been in the nature of the Poor Law system to administer relief in such a way as to involve a social and political stigma upon those who received it. Practically the pauper has been a pariah, and the fact that a man received parish relief was sufficient to deprive him of all political privileges.

There was a time when this was much less felt than it is to-day. The process of evolution has been very gradual. In the Middle Ages the worker was the serf inseparable from the estate of his feudal lord. He passed from serfdom, and began to work for wages. With the greater independence of this position, however, came the risks of a compulsory idleness. His few wants were no longer provided for by his lord, and in times of distress he had to exist upon the little the law allowed. Previous to the era of political reform the man who received poor relief, though placed under the stigma of pauperism, lost no political privilege, because the right to vote had not yet been so far extended. Since then, however, the progress of the masses has been rapid. The people have become possessed of political power, they have gradually built up an admirable system of national education, and are no longer content to suffer meekly under industrial and social evils which are not of their creation. They have begun to discriminate as to the causes of poverty and of pauperism, and have insisted that the man who is merely out of work because he cannot find work to do shall have public relief provided for him in a way which shall attach to him neither social nor political disqualifications.

Side by side with this general sentiment has been growing up the Socialistic movement, which proceeds much further, and which demands much more. Broadly, the Socialist demands that all the means of production should be in the hands of the State, and, as a long step in that direction, he demands that all who are unemployed shall have their wants relieved, not by charity or the Poor Law, but by having employment provided for them by the State. On this point the Socialist workman and the workman who does not profess to be a Socialist are in accord. Indeed, so strong has this general feeling become, that it may be truly said that during the last ten years the urgency of the unemployed difficulty has been

the chief cause of the growth of Socialistic tendencies among the workers of the nation.

Having now reached a stage at which the cry for charity has become a demand for work, and has raised a new problem for the State to solve, it seems desirable to examine briefly the nature of the conditions to be provided for. This may best be done by considering—

1. A few of the chief causes of unemployment.
2. Numbers and classes of unemployed
3. Palliatives and remedies suggested for unemployment.

The word "unemployment" is here used with a certain amount of misgiving. It is practically a word new to the English language. It seems, however, the only single word available as a substantive description of the phrase "out of work," and it is therefore used here for that reason.

1. The causes of unemployment are numerous—too numerous, in fact, for anything like complete recapitulation. Some lie on the surface and are easily traceable, while others are more remote, and some are largely matters of speculation.

It may be said, however, that the chief causes of unemployment are :—

(*a.*) Those more or less regularly periodic crises through which trade and industry recurrently suffer, the origins of which are multifarious, and to some extent inscrutable.

(*b.*) Those seasonal or climatic conditions which frequently prevent large numbers of workers from following their employment for more or less lengthened periods, as in the building trades and in other kinds of outdoor labour.

(*c.*) Other seasonal causes resulting from the decreased demand for, or supply of, certain articles at certain periods.

(*d.*) The entire or local cessation of demand for certain articles, permanently or temporarily, by changes of fashion, or important revolutions in modes of production.

(*e.*) Lengthened disputes in special branches of industry, which, by stopping the supply of material or the progress of accessory work, throw out of employment large numbers of persons in other trades, or in branches of their own trade.

(*f.*) The ordinary fluctuations of the labour market, which, even at the best of times, shows a floating proportion of unemployed workers, chiefly consisting of those who have just terminated engagements and do not find new ones for a few days, and of those who are physically or otherwise unfit to retain employment for more than short periods.

2. The numbers and classes of the unemployed vary indefinitely. The general variations will appear from a cursory analysis of the causes of unemployment as above enumerated.

The periodic crises through which all industries seem to pass at more or less regular intervals are those which affect the largest numbers of workers, because they are general, and touch at the same time all the important industries of the kingdom. In some way or other trades are largely interdependent, and the depression of a few staple industries means the depression of all. The extent of the fluctuations caused in the demand for labour in this way may be seen from the unemployment statistics now published monthly by the Board of Trade. These statistics, it is true, deal with but a limited number of skilled trades, but they may be taken generally as giving a fair indication of the natural demand for labour, seeing that the trades dealt with are the largest and most important.

These returns show that in the winter of 1886–7, which was a period of intense depression, and during which the public demonstrations and demands for work of the unemployed became a somewhat serious feature in the life of large centres of industry, the skilled trades showed a percentage of 10.3 of unemployed workers. Outside these groups of trades the proportion would doubtless be much higher. From this period, however, trade began to improve, and in the winter of 1889–90 the percentage of unemployed in the trades reported on had fallen to a minimum figure of 1.4. From this point, again, trade began to fall off, until, in midwinter 1892–3, the proportion of 1886–7 was again reached. Beyond this, in the direction of attempting to fix numbers of unemployed it is useless to go. There is no means of determining accurately how many persons are out of work, but the data now furnished by the *Labour Gazette* enable a tolerably fair estimate to be formed. It is true that the trades dealt with are limited in number and scope, and therefore their statistics may not give a sufficient impression as to the lesser skilled labour, which is more liable to frequent fluctuation ; but, on the other hand, it is to be borne in mind that in a considerable number of occupations employment is regular and continuous, and in which, therefore, there are practically few, if any, unemployed. There are, again, other occupations in which depression of trade is met rather by reducing the amount of time worked than by entirely dispensing with the services of large numbers of workers, and in which short-time workers can hardly be placed in the category of the unemployed who form a grave social difficulty. It seems, therefore, possible that the proportions of unemployed shown by the Board of Trade figures may very fairly be taken to represent the general state of employment throughout the kingdom. They certainly seem sufficient to show that the most serious cause of unemployment, so far as the numbers

affected are concerned, is the cyclical series of depressions which follow each other with a certain amount of regularity, and which show an unemployed register running through all the intermediate figures between, say, 14 per 1000 during good trade and 103 per 1000 in bad trade. It may thus be inferred that in a population of ten million workers we may at one period of about six months' duration have in the country something over one million of unemployed persons, while at another there may be but a floating balance of 140,000. It is to be observed, however, that the higher figure represents a much more intense degree of unemployment than the lower, because it is in the nature of severe depression to cause large numbers to be thrown out for long periods, while, at the lower figure, the periods are short, and chiefly represent the time lost in passing from one situation to another.

The numbers affected by seasonal and climatic conditions are much less serious, though possibly the crises may recur more frequently, but are of shorter duration. The trades most largely affected by these causes are the building and outdoor trades. From the Board of Trade figures it would appear that the seasonal fluctuation of the chief building trades, taking the mean figures at the end of each month for the years 1888–94, was from 5.5 in January to 2.3 in August, which is a much less serious variation than in the case referred to of general depression.

The other seasonal cause of unemployment arising from a decreased or satisfied demand for certain articles is one which cannot be easily estimated, because it is exemplified most strongly in trades which have not the means of furnishing returns, or which, being largely domestic trades, such as clothing, meet slack trade by short time. The printing and book trades are to some extent seasonal in this way, and the mean monthly fluctuation for the years 1888–94 is shown to have been from the autumn maximum of 5.7 to the spring minimum of 2.5.

The cessation of demand for certain articles, whether by the vagaries of fashion or by revolution in modes of production, also throws out large numbers of workers occasionally; but in this case there is neither periodicity as to time nor possibility of estimate as to numbers. The Nottingham lace trade may be quoted as a case in which the first of these causes is illustrated. The second is shown in every case of the introduction of labour-saving machinery, or the transfer of production from one district to another, which, whatever its ultimate effect may be, causes a very considerable amount of unemployment for the time being.

Lengthened labour disputes may cause the stoppage of

employment for large numbers of workers, in addition to those immediately interested in the struggle who cannot be considered as unemployed in the ordinary sense.

Cases in point are, the great strikes in the coal trade in 1893 and 1894, in which the reduction of coal-supply resulted in the enforced idleness of thousands of workers in trades of which coal is a first necessity; also in disputes where a comparatively small section of mining labour—say, for instance, the pit-boys or engine-men—may throw idle many times their own number of other workers. For the actual combatants themselves the community at large may not feel much sympathy, but in respect to those who are thrown out of work by the action of others whom they cannot control, the public feels bound to be not only sympathetic, but to assist in finding means of support.

The ordinary fluctuations of the labour market affect but a small proportion. In times of good trade this includes a sort of industrial residuum of which it is impossible to get rid under existing conditions.

It should also be noted that (particularly in this category) it is possible that a considerable amount of the unemployment exists because there may not be sufficient means for bringing employers who want workers and workers who want employers into contact with each other.

3. Having thus roughly summarised the chief causes of unemployment, and given a general idea of the numbers affected, anything like precision in this respect being impossible, it becomes much easier to consider some of the palliatives and remedies suggested for the evil of unemployment. Among the chief palliatives are to be classed, first, the trade unions and other provident associations of workmen which, by the provision of benefits for unemployed members, enable them to live upon the fruits of their own providence rather than upon the charity of others. These bodies also act as employment agencies, it being part of their duty, as it is their best policy, to find work for their unemployed members, and thus relieve their funds from the strain of their maintenance. This support of their unemployed also tends to keep up the rate of wages, for men are by its means preserved from the absolute want which drives them to accept employment at any price. Many of the unions also do all in their power to restrict or to prohibit the working of overtime, in order that the amount of work to be done may be shared by a larger number of men. The policy of the trade unions is therefore both palliative and remedial in character. In a few cases they are further remedial, inasmuch as they sometimes endeavour to directly employ their

own members. These are not, perhaps, large contributions to a settlement of the unemployed difficulty, but it is to be said for them that they guard the subscribers from the worst evils of compulsory idleness, and are based upon the admirable principle of self-help. A few of the larger friendly societies also do something to assist members who may be unemployed, but this is rather done to enable them to keep up their subscriptions to the union than to maintain them, or to secure to them any special conditions of labour.

Secondly, there are various benevolent associations, such as the Charity Organisation Society, which act as palliatives and to some extent as employment agencies; but these, after all, only touch the fringe of the real difficulty.

Thirdly, there is the Poor Law system, which requires a somewhat fuller notice, because in it are to be found, in some form or other, most of the principles embodied in all the palliative or remedial schemes suggested for dealing with the unemployed question. The object of the Poor Law system is to ensure as far as possible that no one shall die from want. If this object is not always secured, it is the fault of the individual rather than of the system. It is meant for the relief of absolute poverty, however caused, but it would seem as though the want of employment was one of the chief causes of poverty for which it was intended to provide. The chief aim of the early Poor Law seems to have been that parish authorities should see that employment was provided for persons having no means to maintain themselves or trades to work at. At various times experiments were made under which the poor were employed either in small industries, in farming, or in road-making. The Poor Law Commission of 1834, however, reported that most of these experiments had resulted in failure. As a consequence the new Poor Law was intended to relieve destitution only, and although work may be imposed as a test, relief is not given as wages, but according to the absolute needs of each case. The general principle on which the Poor Law system, so far as the unemployed are concerned, is now based is, that able-bodied men shall only receive relief from the rates on the ground of being out of employment, subject to such a test of destitution as is involved in the acceptance of an order for admission to the workhouse or the performance of a task of work. As a consequence of accepting relief under either of these conditions the man becomes a pauper, and is subject to civil and political disabilities, a circumstance which at once destroys any claim that the Poor Law should be considered a just mode of relief for the honest and industrious unemployed.

Among the benevolent agencies which exist with a view of remedying the evil of unemployment, the Salvation Army is worthy of special mention, inasmuch as it has set to work in a very deliberate way to provide employment for a class of people mostly unable to find work for themselves. In the first place, this organisation acts as an employment agency, and endeavours to find work for all who sign its registers. In the second place, it has established "elevator workshops," in which employment for short periods is provided, and which, as their name implies, are meant to elevate those units of the industrial residuum for whom they are chiefly intended. In these places in London nearly 300 men are thus employed at one time, while the employment agency finds occupation, chiefly temporary, for considerable numbers. Thus in 1892 there were 10,743 applicants for employment, for 6650 of whom work was found. Of this total, 3010 passed into the Salvation Army workshops, and 421 were found permanent and 3223 temporary employment. The "Farm Colony" scheme of the Army is, however, its most important undertaking. This is a freehold estate at Hadleigh, in Essex, of about 1500 acres of land, with a foreshore of the river Thames of 1400 acres. The rules of the colony are too long for quotation here, but they show that it is only intended for those who cannot find occupation elsewhere, and who are prepared to work for maintenance and shelter only, but grants may be paid by the governor to deserving men. Most of the colonists have passed through the elevator workshops, but many come direct to the farm. Several industries are carried on, the workers being put to those for which they are found most suitable. From the opening of the farm in May 1891 up to the end of June 1893, 991 had passed through the colony. Of these, more than half the total left the farm within three months, and a small proportion remained over a year. It is as yet extremely difficult to say what the ultimate result of this experiment may be, but, at best, it can touch only a very small number, and can never be of much real service in relieving unemployment in its widest sense, and as illustrated at times of intense trade depression.

There are also the Labour Homes of the Church Army, and the farm of the Home Colonisation Society in Westmoreland, which, in a small way, do something to mitigate the evils of unemployment; but these, again, deal rather with the residuum than with the great body of vigorous workers who can at times find no occupation.

All such agencies as the above largely resemble the labour colonies to be found in Germany, the primary object of which

is rather to provide temporary industrial refuges of a reformatory character for elements of the population which form part of the social residuum. These colonies are described by the Labour Colony Central Board as "institutions of Christian charity, in which any one who has suffered inward or outward shipwreck, or who stands in danger of so suffering, may be received and raised again." The special aim of these colonies is to secure the permanent moral elevation of the colonists, and board and lodging are not to exceed the strictest requirements. Dismissal from the colony is the only form of punishment. The funds for the support of these institutions are obtained from grants from the provincial governments, from the municipal authorities, and from voluntary subscriptions raised in various ways. In 1893 there were 3044 places in the twenty-five colonies of this kind in Germany. The first of these colonies, which are almost entirely agricultural, was formed in 1882, and from that time up to June 1893 the total number discharged from them was 61,334. Prolonged residence is discouraged, and in no case should a colonist be allowed to stay longer than two years. Though useful as benevolent agencies for the relief of distress and the elevation of the weak and fallen, it can hardly be said that these colonies have any perceptible effect upon the great problem of unemployed labour in its more serious forms.

The Dutch labour colonies, the commencement of which dates as far back as 1818, have primarily in view the same objects as those of Germany, and they by no means meet the difficulties of unemployment. They are, however, more permanent in their character than the German, and adults who enter may, in some of them, remain there for life, subject to conditions as to good behaviour. The German colonies deal only with male adults, but in Holland some of the colonies deal with whole families, educating the children and starting them in life.

The Belgian labour colonies are also simply benevolent or reformatory agencies. One is for the infirm, another for able-bodied beggars and vagrants, who are committed to the colony for periods varying from two to seven years, and another is for persons whose poverty arises from circumstances beyond their own control. These colonies are capable of dealing at one time with 6700 colonists, more than half of such accommodation being for the beggar or vagrant class. Of this section it seems sufficient to say that when at work in the fields they are under the supervision of an officer who is attended by a soldier with a loaded rifle. Smaller experiments in this direction have been tried at La Chalmelle, in France, by the Paris Municipal Council,

and also in Austria and Switzerland, but none of them present features substantially different from those already referred to.

If the intention is to try and reduce mendicancy, to shelter the vagrant, or to reform the dissolute and idle, then such colonies may be of use; but if they are intended to provide employment for those who are generally included in the class of unemployed who form the chief difficulty in this country, they must be pronounced hopeless as effective remedies, or even as tolerable palliatives. Labour bureaux, or exchanges, have of recent years done some amount of service in removing, in certain localities at least, one of the evils attendant upon want of work. These have provided a means of bringing employers in search of workers and workers in search of employers within each other's knowledge, and have to that extent discharged a useful function. Labour bureaux originated on the Continent, and have in many cases been more highly developed there than in this country. In fact, in France a system of register offices, such as in this country exist chiefly for domestic servants, has long prevailed, but they were used as a means of seeking employment by workers of all classes. Abuses growing out of this system led to the establishment of labour bureaux, subsidised by municipalities. Of these the most important is that of Paris, which was opened in 1887. In 1892 this bureau moved from its original habitation into a magnificent building specially erected by the Municipal Council at a cost of £80,000. Practically the whole management of this institution was handed over to the trade unions or syndicates, all of which were provided with office accommodation in the building. Applications for workmen or for employers were made through the different syndicates, and in this way much useful work was done. There were halls for meetings and for gatherings of all kinds, and for some time the institution was fairly successful. The municipality voted a credit of £800 a year for working expenses, but in return reserved to itself a right of control over the institution. Gradually political differences arose among the various groups represented, and ultimately the bureau was closed, owing to the refusal of some of the unions to comply with the conditions governing the constitution of the establishment. It has since been reopened, and confines itself more closely to the work for which it was chiefly intended. In 1891, when in full work, the Bourse du Travail, as it was called, registered 37,142 applications, and of these 29,429 were placed temporarily, while 2814 were found permanent situations. 1891, however, was a year of good trade. The Municipal Free Registries, also largely existing in France, had in the same year 24,805

applications from unemployed workmen, of whom 10,856 were placed.*

In some of the British colonies important experiments in this direction have been made. In New Zealand a bureau of industries was founded in June 1891 to meet the necessities of the unemployed in a time of great trade depression, and 200 agencies were established in different parts of the colony. Unemployed persons were assisted by railway passes, free to those seeking work for themselves, but as advances to be repaid by those going actually to situations. Public works were commenced, and the labour let out to the men under a system of co-operative contracts. During the first year 2974 persons were assisted to employment, 200 to private employers, and the others to public works. During the second year 2518 were placed with private employers, and 1356 on public works.

New South Wales in 1892 also instituted a Government Labour Bureau in Sydney to cope with the intense distress then prevailing from want of work, and this was not only used as an employment registry, but also as a centre for the distribution of food-supplies to the unemployed, for many of whom sleeping accommodation also had to be provided. The report of this bureau for the year ending March 1895 shows that during the three years since its institution by the State 44,320 applications for employment were registered, general labourers forming the largest class; of these, 34,883 were assisted and sent to work.

Under an Act of 1893 the colony established three labour settlements with the object of enabling unemployed workmen to settle on the land. In some cases it is provided that intending settlers shall put down a certain sum of money before the Government provides any, but in others the Government advances the necessary funds to begin with. Up to the beginning of 1894 the men and families thus settled made up a total of 3333 souls. Writing in his third report (1894–5), however, the superintendent says he thinks that their most sanguine supporters cannot say that these settlements are a success.

In England labour bureaux have been established by several municipalities, and there are a few maintained by voluntary benevolence. Of these latter the two earliest were established at Egham and Ipswich in 1885. The first of the municipal registries was that of Chelsea, which was closed after two or three years' experience. Some idea of the work done by these agencies may be gathered from a table published monthly in

* Information concerning the French labour system has been given in preceding essays relating to the condition of the working classes.

the *Labour Gazette* of the Board of Trade, which shows the work done by eleven bureaux of different kinds, and beyond this it is impossible to say how much or how little is done. The table deals with five municipal and two voluntary agencies in London, and with three municipal and one voluntary in the provinces. At the end of February 1896 there were on the books of all these registries 2841 persons, while during the same month the number of fresh applications was 2589 work-people and 571 employers. During the same period 1510 people were found work under private employers, and 620 were taken off the books by public authorities. Nearly one-half of the applicants consist of general labourers, porters, and messengers; carmen and horsemen being also very numerous; these occupations, with clerks and warehousemen added, forming 66 per cent. of the total dealt with by these eleven agencies. These represent about one-half of the total bureaux in England.

Nor can it be said their success is great. Experience in actual working has caused many efforts of this kind to be abandoned, and important municipalities have refused to try them even experimentally. Occasionally agencies of this kind are only established temporarily to meet a time of special difficulty, and this being past, they cease operations.

Advocates of the system believe that in every town there should be a municipal labour registry, and that in London there should be a central Government organisation in constant communication with the local agencies, and dealing with the distribution of unemployed labour generally. For many skilled trades the bureaux are of little service, nor are they required for large industries carried on under the factory system. In such cases they are under the disadvantage of not being needed when trade is good, because the parties come so easily together of themselves by methods generally understood. In times of depression, on the other hand, they are not needed, simply because there is no demand for men. Among the organised trades the unions attend to this kind of work themselves, and the members are somewhat distrustful of employment agencies, which may tend to reduce the rate of wages, because they deal chiefly with cheap labour. Thus the sphere in which these institutions work is limited; but they are as yet merely in their experimental stage, and may in time develop, under proper management, into really useful agencies for mitigating some of the evils of unemployment.

Public relief works and municipal employment are frequently suggested as means of always ensuring that men who want work may be provided with it. Relief works have often been tried in times of great emergency, but in most cases have

been organised rather as a test than as a means of enabling a man to earn a living. To have municipal workshops of all kinds constantly available for those unable to obtain employment elsewhere is, by the majority of persons, regarded as a Socialistic ideal impossible of practical application. It suffices to say that this branch of the subject is beset with difficulties. Those difficulties are admirably indicated in the Local Government Board circular issued to municipal bodies by Sir Henry Fowler in 1892. He said: "What is required in the endeavour to relieve artisans and others who have hitherto avoided Poor Law assistance, and who are temporarily deprived of employment, is:—

"1. Work which will not involve the stigma of pauperism;

"2. Work which all can perform, whatever may have been their previous avocations;

"3. Work which does not compete with other labourers at present in employment; and,

"Lastly, work which is not likely to interfere with the resumption of regular employment in their own trades by those who seek it."

A very common form of unemployment is that brought about by old age. For this the chief palliative at present is the workhouse. A more benevolent spirit is now beginning to spread abroad, however, among legislators, and there has been within the last few years a remarkable growth of feeling in favour of old age pensions. Most of the schemes suggested propose a payment of a stated amount by the individual, supplemented by a proportionate contribution by the State, but in most cases it is not intended that such pensions shall be payable before the age of sixty-five, or, at the earliest, sixty years. Nowadays the working life of the ordinary labourer or artisan does not last nearly so long as this, except in a small proportion of cases, and therefore, as an ordinary unemployment remedy, old age pensions are not to be considered. But as a means of providing that a working man, after a life of honest toil, shall have some other resource than the workhouse in his old age, such proposals are worthy of the most careful attention of the nation.

In conclusion, it is desirable to formulate briefly a few general opinions as to possible solutions of some of the knottiest points of the unemployment difficulty, following the order observed in stating the chief causes of employment:—

1. In respect to such a calamity as a cotton famine, or to the periodic trade crises which are seen to affect the largest numbers, and which cannot be always foreseen, special palliatives and remedies are needed. These should be: (*a.*) Public works, wherever such are practicable, under the conditions re-

quired by Sir Henry Fowler's circular above quoted. (*b.*) Where such work is not readily available, relief in money or food should be given to the honest unemployed, without entailing the stigma of pauperism, and without placing a man under any civil or political disability.

2. Unemployment by reason of seasonal or climatic conditions would, in many cases, have to be met in the same way, though it is possible that public bodies might largely mitigate the distress of such periods by arranging a reserve of special kinds of labour on things not urgently needed, but always more or less required for use in the public work of their districts.

3. The seasonal depressions in many trades, caused by the decreased or satisfied demand for certain articles, might be mitigated to some extent by public bodies placing their contracts, say, for boots, clothing, books, &c., at periods coinciding with the dull seasons in such trades, and generally by employing labour out of the regular season where it is in their power to do so.

4. The displacement of labour by machinery, its indirect stoppage by disputes, and the ordinary fluctuations of the labour market, though in some cases requiring treatment by the community in the ways above indicated, would be much mitigated in their effect by more complete organisation of the workers themselves, and by such agencies as labour bureaux, which in such cases might usefully assist in the transference of displaced industry. It may also, at such times, be advisable to encourage and even assist emigration, but this is not suggested as a remedy for general application.

The preceding considerations are the chief of those that suggest themselves in connection with the subject of unemployment, but what precise turn the future will take it is difficult to say. Forces have been brought into activity which will not be allowed to sleep. For a time such exciting topics as war may divert men's minds from social questions, but that cannot be for long. "Socialism" in its varied aspects will keep the movement alive, and although the Socialists may not see their expectations realised in the direction they anticipate, the result will be the same—"the greatest happiness for the greatest number." With the reform several new facts will become more and more apparent. The legend which made work a punishment may be considered the dream of man's childhood; overwork, injurious as it may be, is less injurious than idleness, whether that idleness be the result of poverty or of wealth. More stringent legislation to suppress vagrancy will run side by side with enactments to prevent the too great accumulation of property, and the consequent indolence of certain of the leisured

classes. As we have said, leisure at the close of a life of hard work is legitimate, and will be more and more regarded; but the leisure which throughout life keeps its possessor inactive, a useless member of society, will come more and more under the scourge of public opinion. The time may not yet be at hand, but it will assuredly come, when employment will have to be found for all men, and in one way or another all men will have to work for the general weal.

ESSAY XI

WOMAN AND CIVILISATION

THERE is no more potent civilising agency than the rightly exercised influence of woman, and at no period of the world's history has that influence been more effective for good than at the present time. So far as the changes in her condition are concerned, they run in parallel lines with those of Man, and the elevation or degradation of one sex reacts upon and raises or depresses the other.

The disabilities which have been the fertile theme of writers of both sexes upon woman are beginning to disappear, and wherever new-world civilisation comes in contact with old-world usages, one of the first results is the education and elevation of wives and daughters. But those disabilities have been real, and in many respects they have been the result of man's selfishness, or of his mistaken pride and self-sufficiency, often of his lust. Until the year 1886 married women had no legal right to the possession of their children—they belonged to the father under all ordinary conditions; but unmarried mothers, no matter how completely they had been the victims of perfidious men, are still compelled to support their offspring with the aid of a pittance which it is in the power of a magistrate to exact from the illegitimate father. To this day, in almost every State, the law of divorce is very unequal. Everywhere infidelity alone in the wife is a sufficient ground for divorce; in the husband it must be coupled with some other offences, such as cruelty and desertion. Until quite recently, all that a wife possessed, whether earned by her own labour or the gift of others, unless it was settled in trust, was at the mercy of a lazy and dissolute husband, who could desert his wife, and return time after time to fatten upon her earnings; and there was no redress. The only protection which is even now extended to young girls to save them from becoming the prey of seducers is the limitation of the "age of consent." This varies greatly in different countries; in this country it is sixteen, and in the United States, where the greatest

deference is supposed to be shown to the fair sex, it ranges from ten years in some States up to eighteen in two—one being Wyoming, where there is Woman's Suffrage. In India, where infant marriage is still a widespread custom, there has of late been much agitation to raise the "age of consent" to something like a rational standard. This is one of the results of that contact between Western enlightenment and Oriental stagnation to which reference has been made; and another result of the association is the growing disapproval of the mewing up of women. No better illustration of the principle that the degradation of the one sex affects the other could be found than this one. Those who have travelled in the East, more especially in our own great dependency, often come across men, otherwise perhaps enlightened, who will tell them that their wives are happy and contented in what we consider close confinement. If that were so it would not be a matter of surprise, for there is no doubt that a well-treated slave was and is often more happy than a persecuted freeman. Neither must it be forgotten that some of the natives of India don't think it quite safe to allow their wives and daughters to associate with the conquering race. But every one who has dipped beneath the surface has noticed that the more unselfish natives who have associated with English men and women are alive to the unnatural condition of their own female relatives, and are only too glad to avail themselves of the services of Western ladies to fit them for a greater share in social and public life. It would be possible to extend this theme almost indefinitely, and to show that there is one law for the man and another for the woman, just as there is undoubtedly one law for the rich and another for the poor; but that is not the object of this essay, which is rather to show how and where the disabilities of the sex are being removed; where and how woman is receiving that justice at the hands of men, ay, and of her own sex—often the more tyrannical of the two—which has hitherto been denied to her.

According to the Census returns of 1891, there were, out of a population of some twenty-nine millions in England and Wales, nearly nine hundred thousand more women than men. Nearly three and a half million women aged twenty and upwards were either married or widows. At present the marriage rate is slightly declining, and the proportion of wage-earning married women is believed to be declining also, the chief cause being, it is thought, the relief of such women from man's work. The verification of beliefs as to such questions as the effect upon wages of the competition of married women, the connection between married women's labour and infant mortality, the

alleged displacement of male labour by female, and so on, is, however, extremely difficult, owing to the extraordinary complexity of the data, varying local conditions, &c., &c., and the greatest caution should be exercised in accepting what may seem to be well-marked industrial tendencies in one part of the country as if they were universally applicable to industry generally.

In 1891 more than four million women and girls over the age of ten were returned as employed. Of these, the professional class, so called, numbered just over 328,000. All the other women returned as employed belong to the lower ranks of life, domestic servants and manual workers numbering together more than three and a half millions, as against some eighty-seven thousand engaged in shopkeeping and serving and in purely commercial and rural occupations.

There is no question that, on the whole, domestic service is by far the best-paid occupation in the lower ranks of women's labour; and wages have been slowly but steadily rising, not only here, but throughout the civilised world, especially in the United States, for some decades past. Further, they show no sign of approaching diminution, but rather, if anything, the contrary. A girl now earns £15 a year, and of course her board and lodging, where her grandmother or great-grandmother earned but £5. Against these comparatively high wages, and in some cases comparatively light work and good living, must be set the growing dislike to living away from home, and having no regularly defined hours of labour. Statistics of illegitimacy also tend to show that servants are, as a class, more beset with temptations of a grave kind than factory girls and others who seldom come into contact with men of a higher social, though perhaps lower moral, class.

It is difficult to give any average for the wages earned by women in industrial employments; they depend so much upon local and national commercial conditions at any given time. As a very general rule, it may be said that wages are higher in the north of England than in Scotland, and, with some exceptions, higher in Scotland and the south of England than in Ireland. Average wages have to be calculated over extended periods, both when trade is brisk and when it is slack; and depression and prosperity seem to go in cycles. Again, the rate of wages will be to some extent governed by the standard of comfort and of living, not only in different parts of any country, but in different parts of the world. Money wages are higher for women in the United States than in England, and higher in England than in Germany or Italy; but then the purchasing power of money is greater by contrast in the countries where it

is most scarce. A drachma in Greece—in its present state of melancholy depreciation worth about 5¾d. of our money—goes as far as a franc, to which it nominally corresponds, in France, or a shilling in England. The different standard of living and the difference in the purchasing power of money are the reasons why English operatives look so much askance at the importation of articles "made in Germany." The highest average wages earned by industrial women in England are found in the cotton factories of Lancashire and Cheshire. They varied in 1886 from 18s. 2d. a week at Burnley to 11s. 11d. at Manchester. In London women's wages are much lower, partly from commercial causes, partly owing to the low standard of efficiency, partly because a great deal is taken up in an amateurish spirit; *i.e.*, casually, in bad times and when the husband is out of work, or is lazy or drunken. The average wage for women in East London is probably not more than 10s. a week, and 8s. would probably be nearer the mark. Many never get near 8s., in the lowest ranks. The women who do home-work are the most forlorn class: the Shoreditch matchbox-makers earn about 2¼d. a gross (twelve dozen), and have to find their own paste and fire to dry the boxes. Even by working from morning till night, with perhaps the help of young children out of school-hours, they cannot make more than 5s. or 6s. a week at the outside. It is probable, however, that in course of time these miserable domestic workshops will be gradually reduced, though perhaps not altogether abolished, for by the Factory Act of 1895 employers who give out work to be done at home are made responsible for the sanitary conditions of the places in which it is done. This is not likely to have any directly ameliorative effect upon the domestic workshop as such; it will be much less trouble for the employer to open a central workshop under direct management, to which the women would come to work within factory hours and under factory regulations; and though this is deplored in some quarters as being likely to lead to "the neglect of the home and the children," it must be observed against this that such unspeakably pitiful travesties of a "home" as these wretched holes are apt to be are not worth the name at all. If the work is transferred to factories, provision would have to be made for the care of the children whilst the mothers are employed. The movement in this direction is progressing rapidly as a palliative, until married women are entirely relieved from such drudgery.

In proportion to their social status and high character, and the necessity for keeping up appearances, no class of young women seem so miserably paid as dressmakers' assistants. Many

of these do not earn more than about 8s. a week even in West London, and were it not that charitable "homes" or boarding-houses have been established for a proportion of them, those who are not partially kept by their fathers or other relatives could not live with safety at all. As it is, many of these girls suffer severe privation in the matter of both food and underclothing in cold weather, and from the economic point of view their position is as grievous as any to be found in the ranks of female manual labour, though it is difficult to suggest a remedy.

The average wages of women in all occupations throughout England and Wales is put as low as 10s. per week.

Before leaving the subject of starvation wages (usually the result of sweating) in the case of women, it is absolutely necessary to make a brief reference to its most distressing and degrading feature, namely, the almost enforced recourse to immoral practices on the part of married women as well as unmarried girls in order to supplement their wretchedly low earnings. In some countries, and especially in large cities, this is regarded as a matter of course, and Paris has long been famous for the existence of what may be called its "peculiar institution." It is said that the same remark now applies to Melbourne, Chicago, &c., but we have no need to step over our own borders for examples. Great credit is due to those women who, in spite of privation and suffering, remain pure and untainted; but in regard to those who do not come under that category, it can hardly be said, in the broadest sense and in perfect charity, that the wages of sin is death. That it is demoralisation, that it is shame, no one will deny, but the great sinners, the wholly unpardonable sinners, are those whose greed and heartlessness leads them to batten upon the dire necessities of their workpeople so far as to disregard every consideration of morality. There has been some talk of a Royal Commission to consider this matter, and a former President of the Board of Trade expressed his readiness to receive information which might lead to such an inquiry. That cannot be long delayed, and the inquiry itself, if public, would go far to expose and mitigate the evil.

Two facts may be stated in regard to the employment of women which are beyond dispute: one is, that the number employed has increased in excess of the increase of population; the other, that everywhere the wages of women are lower than those of men, even in those cases where the work is essentially woman's function. The British returns only show the increase of employment in a general and undefined way, but in the United States, where they profess to give more detailed in-

formation, the excess in the number of women employed in the decade ending 1890 over the increase in population is stated to be 300,000. Under some few heads in this country there is said to be a diminution, as, for example, of girls under twenty-five in domestic service. This is accounted for by the preference, already touched upon, which is given by girls to factory occupations over household service, on account of the shorter hours and greater freedom from restraint, and this will be found to apply to every country where manufacturing industries are being developed and extended. That women's wages are normally below those of men no one will deny, but the following illustrations may be of interest and of use for future reference. In this country the average wages of—

	Men.		Boys.		Women.		Girls.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Tinplate workers, are per week . .	33	5	11	3	10	0	6	3
Printing and engraving „ . .	33	8	8	7	11	9	5	7
Boot and shoe factories „ . .	24	3	8	4	12	6	5	6

and so on.

In employments which are more or less fitted for women the same obtains. In shops in this country, with the exception of highly paid forewomen, men's wages are on the higher scale. In Natal male shop employees receive £8 to £15 per month; women, £4 to £6. In New South Wales tailors working in shops receive, men, 44s. per week; women working at home, 20s. to 22s. 6d. In Canada shopmen get $1.25, women $1 per day. Spinners (Montreal) are paid in the same ratio, and this will be found to apply more or less generally in all civilised States.

In the United States particular attention has been directed to the question of the comparative remuneration of the sexes, and data have been published which may be said to be applicable almost everywhere. In a report recently issued by the State of Massachusetts on the condition of women in the United States generally, there will be found several tables which fully bear out the preceding statements. Although they relate to women who are supposed to have received a liberal education, they include those engaged as bookkeepers, clerks, forewomen, nurses, proof-readers, typewriters, &c., and they represent the views of a large number of employers and employees. In the case of 451 men and women who were employed in fifty-three distinct occupations, there were only five women who received higher wages than men in the same employment; whilst in

another table dealing with 284 men and women in eighteen different occupations (being some of those referred to in the first table), the work done by forty-one women was deemed more valuable than the same work done by men; the reverse was the case with thirty-one men; and in 212 cases their work was of equal value.*

In connection with this subject, a few words must be devoted to the consideration of women's trade unions and co-operative distribution. The second is an unmixed benefit to the housewives of the working classes, for cash payment necessitates thrift, and leads to economy, both qualities which need to be cultivated. The question of women's unions is rather more complex, but their future is sufficiently plain. Whoever has watched the rise of men's unions must see in those of women many points of resemblance, some divergences. Low wages left men little to support their unions; long subserviency to employers, whose right to fix the rate of wages was never doubted, cowed the majority; whilst indifference and jealousy added to the difficulties of unionist leaders. To some extent all these features are apparent in the movement which has recently been started in earnest, both at home and abroad, to establish trade unions of women. A new feature is the interference of men workers. There can be no doubt that in many cases that intervention is the result of jealousy, but common sense has already shown to the majority that it is to the interest of the men that the wages of women should be raised and maintained. The result has been the representation of women's unions at the Trades Congress, and a considerable amount of sympathy and support being given to individual unions. Added to this, working women are better supported at the outset by ladies of influence, and the hostility of employers (with the exception of those sweaters who have been referred to) has been disarmed by the sex of the workers, whilst many employers are disposed to go further and to help them in their efforts to improve their position. The success of the movement is therefore only a question of time.

So much for the women of the labouring classes; now let us

* The report referred to is that of 1894, published in Boston 1895. It contains much valuable information as to the position of women and the *causes* of their lower remuneration. Employers say that women require more supervision; that they are physically weaker; that they lack breadth of mind to successfully manage large industries; that they are not like men trained to business; that permanence is a great element of consideration, but that women frequently take up an occupation and give it up just as they become efficient. Marriage is, of course, the chief cause of this, and many other reasons are given for the lower value of woman's work. Employees give some of the above reasons, but they add that custom places a lower estimate on woman's work; that women lack the nerve to demand what is their due; that they often bring personalities into business; that, although conscientious in details, they lack ambition to be successful in business, &c., &c. The whole report is well worthy of careful study.

mount a step in the social scale. During the last few years the increasing employment of middle-class women has attracted considerable attention, and, as in the case of the attitude of some men towards women's unions, fears and opposition have been roused in the belief that women were "taking the bread out of men's mouths." So far as carefully sifted official statistics go, the fear is quite chimerical and the opposition misplaced. Even if it were well founded, it would, of course, be no argument in favour of selecting the women rather than the men to starve, if anybody must. But as a matter of simple fact, though the employment of wage-earning women generally advanced between 1881 and 1891 in the case, for instance, of commercial clerks by 96 per 100,000 of females over ten years of age, the increase among men and boys in the same employment during the same period was no less than 282 per 100,000. And even the increase of employed middle-class women must be set off against a decline in the same period of the small trader and servant class. Many women who are now regarded as of the middle class would, before the Elementary Education Act of 1870, have found employment as servants and shop-assistants. This last-named circumstance is of itself an indication of the general progress of the sex; indeed, the latter half of the present century has seen immense strides in the educational opportunities offered to women and girls. Queen's and Bedford Colleges, London; the Cambridge Local Examinations, and those of the London University; the College at Hitchin, afterwards removed to Cambridge, where it was incorporated as Girton College; Newnham College, Cambridge; the Girls' Public Day School Company, which is at present educating hundreds of girls year by year; and the Oxford colleges for women, have all arisen within the last fifty years. Women are now admitted to the degrees of all British universities, with the exception of Oxford and Cambridge, where the privilege cannot be much longer deferred. The one ancient Irish university of Trinity College, Dublin, still rather prides itself on lagging in the rear. The new University of Wales is the most advanced and just of all towards women, for by its charter it makes absolutely no distinction between men and women, both being equally eligible for any post or office, from that of the Chancellor down. Women are also admitted to the examinations and degrees of universities in America, New Zealand, France, Holland, Belgium, Italy, Sweden, Norway, Finland, Germany, Switzerland, &c.

Since 1865 the opportunities afforded to Englishwomen of entering the medical profession have slowly but surely advanced, until in 1892 women doctors were admitted as members by the British Medical Association; the same applies,

in a more marked extent, in the United States and some other countries.

The formation of County Councils under the Local Government Act in 1888, and their authorisation as boards of technical education throughout the country, have virtually opened a new profession to women, that of teacher of domestic economy and dairy work.

The societies for what is known as "university extension" have been very loth to recognise women as lecturers, notwithstanding the fact that a very large proportion, in many districts the vast majority, of the university extension students everywhere are women. Cambridge has but one woman-lecturer; Oxford is but slightly more advanced, and hence a Women Lecturers' Association was recently founded to open a new career for and to utilise the services of university and other women lecturers, more especially for rural and manufacturing districts, for girls' and working men's clubs, &c., &c.

The profession of nursing need only be mentioned, as it will be recognised by every one how welcome the trained nurse is everywhere, and how vastly she has altered for the better since the days of Mrs. Gamp. The foundation on a national basis, and connected with the name of her Majesty, of the Jubilee Nursing Institute is a sufficient indication of improved status. In France, the United States, &c., similar advantages have been offered to women for entering the learned professions. Wherever women are employed by the State in France, as well as in girls' communal schools, doctoresses have a preference, providing their ability equals that of men, and the number of women finding employments hitherto closed to them is increasing daily. In the United States it is needless to say that almost every profession is open to women. In the arts we find sculptors, cameo-carvers, artists; doctoresses there are without number, and even lawyers and ministers of religion. Other countries are following suit, but not so rapidly as those mentioned.

There is, however, still great room for improvement, both in the salaries which professional women receive, and in the matter of opening out new careers. Journalism as a profession for women in this country is at present largely confined to London, and even there few women are placed upon the regular office staff of any great daily paper, except to do interviews, reports of social functions, fashion columns, and the like. An increasing number of able women writers contribute to the press as free-lances, on all kinds of topics.* In such instances no questions are asked by editors as to whether the writers are

* This applies to many country papers also.

men or women, provided they write what the editors really want, nor is sex taken into account at all in the matter of remuneration; indeed, in many cases the editors probably never think of inquiring whether their unseen free-lance correspondent is a man or a woman, though there are one or two who would probably be prejudiced against a writer whom they knew *beforehand* to be a woman. The *Times'* Australian correspondent is a lady, of whom it has been said that if she had been a man she would certainly have been a Cabinet Minister. The Paris correspondent of the *Daily News* is a lady, and has occupied that position, and has managed the office of the paper there, for many years. She succeeded her late husband in the post. A good many women do general reviewing for daily and weekly London papers. In the United States, however, women are playing as prominent a part in journalism as in some other professions. Editors and shorthand and typewriting clerks are frequently young ladies. One lady was for years the editor of the *New York Sunday Tribune*, and another stands at the head of the American press as a letter essayist.

The last decade of the nineteenth century has seen a very notable advance in the admission of women of high ability and qualifications into responsible posts of the Government service. One of the three chief labour correspondents under the Board of Trade is a lady, who has special charge of the intelligence department of the industrial position of the women-workers of the kingdom. The work over which she presides is of a highly complex and difficult character, and her reports are masterpieces of lucid, though intricate, analysis. Four ladies are at present engaged under the Home Office as factory inspectors, and almost at the time of writing the report comes of the appointment of two ladies as her Majesty's inspectors of schools under the Education Department. All these appointments have been made on precisely the same footing as in the case of men: the ladies enter in the same official grades, and receive exactly the same official salaries. It is impossible to overestimate the importance to women generally, and to professional women in particular, of these pioneers in the Government service having "started fair," and of the position thus taken up towards brain-working women by "the State as a model employer."

Women have also been appointed of late years as sanitary inspectors under local boards at Kensington, Islington, Brighton, Manchester, Nottingham, and elsewhere; as medical officers to asylums and other public institutions; as organising secretaries of domestic economy under County Councils; as astronomical

computors in the Observatories of Greenwich, Hong-Kong, Natal, &c.; as factory inspectors in France, Australia, and New Zealand; as inspectors of girls' schools in India, &c., &c.

Three ladies were appointed, for the first time, as royal commissioners on the Secondary Education Commission. None were placed on the Labour Commission, but it was found impossible to have the questions of women's labour properly sifted without them, and four lady assistant-commissioners were shortly afterwards appointed, who issued a joint-report. Ladies have also been placed on departmental committees, and one on the Prisons' Commission of Inquiry.* A Poor Law lady inspector, under the Local Government Board, was appointed more than twenty years ago. Not one of these important appointments but seems to have justified itself in the highest degree.

But what are these among so many? There is a crying need for the opening up of new professional careers for really able and highly trained women. That such opportunities are afforded in the United States we have already shown, and much, of course, depends upon the women themselves. At present by far the largest number of women who leave the Universities of Oxford and Cambridge take to teaching for a living—not so much because they particularly care about such drudgery as teaching the "average girl" in a provincial High School—though *some*, of course, are really born as well as made teachers—but because they must earn a living somewhere at some sort of work, and the teaching profession is the only one where, although the competition is quite bad enough, the chances of their obtaining an appointment and a competency, such as it is, are not, as in some other professions, ten thousand to one. Unless even a university woman has private means—which few have—or highly placed influential friends—which most have not—their chances of succeeding in any career except teaching are at present extremely small.

Women nowadays are seeking not only the improvement of their economic position, by securing better education, new openings, and a better scale of remuneration. The economic difficulty is at the bottom of all the other difficulties, but it does not affect all classes of women alike. Those who are raised above anxiety as to bread and butter, clothes, and a roof, and are free from dread as to their old age, find their growing energies turned in other directions. These it is who are trying to solve the problem of a more satisfactory form of their duty to their neighbour, local and national. Here, again, the last half-century has witnessed great advances in

* Miss Eliza Orme.

the way of restitution of ancient rights and duties. Women were deprived by statute of their ancient political rights, when the Reform Act was passed in 1832, by the definite insertion of the words "*male* person," and this right has not yet been restored, while every successive extension of the franchise to men has made their relative position still worse. When only a small proportion of the male population of the country were voters—gentlemen of wealth and understanding—the relative position of the disfranchised women of similar qualifications was not serious, and that probably accounts for the fact that comparatively little attention was attracted at the time to the fact of their statutory disfranchisement. But now that every agricultural labourer, every male householder, servant, or lodger, whatever may be his moral or intellectual disqualifications, is permitted to take part in the counsels of the Empire, while no woman, however enlightened, upright, law-abiding, and tax-paying, is permitted to do so, the inequality becomes more and more grinding and bitter to thoughtful women year by year. The blame for this state of things does not, however, rest entirely with the male sex. Statesmen of all parties have been ready to grant the parliamentary franchise to women, at least to such as pay rates and have therefore an undisputed right to representation; and if the Primrose dames and Liberal women's leaders were able to appreciate what is due to themselves and their sex, they would long since have secured the right to vote for, and even to become members of Parliament. But so long as women are willing to work for male candidates, often following the bad example of some male canvassers and descending to dubious electioneering practices, and others profess an absolute indifference, or even antagonism, to the enfranchisement of their sex, it cannot be expected that men, who have so long held the reins of power, will relinquish their hold upon them to please a few earnest but often extreme enthusiasts of the other sex. That women should, and will before long, exercise the franchise, especially those who contribute towards the maintenance of the State, there can be no doubt; and that they can use their power beneficially is shown by their action, already referred to, in the State of Wyoming. Whether they will all do so is very questionable, for it is the very fact of the devotion of a large number to old customs and superstitions which men are seeking to abrogate that has gained for them the support and approval of the votaries of reaction. There will never be wanting politicians of high rank to tell them that their highest privilege is to help men to govern the world.

So much for the parliamentary franchise; but women were

also statutorily deprived of their ancient municipal rights by the Municipal Corporation Act of 1835. These have, however, been more or less recovered, though efforts are still needed in order to bring the forms under which the principle has been reasserted and restored up to date. Women are still excluded from serving on County Councils, owing to a technical flaw in the drafting of the Act of 1888, which has been decided to be against them in the Courts; they may both vote for and serve on District and Parish Councils under the Act of 1894, though even here the framers of the Act seem to have actually gone out of their way to place special disabilities on women; *e.g.*, male owners, lodgers, and holders of the service franchise may vote, but not women who fall under the same categories. Women may vote for and serve as Poor Law Guardians and on the School Boards; they may vote for town councillors, but not serve. In the Isle of Man, where there is a Home Rule constitution, women owners of property have been enfranchised as voters for the House of Keys since 1880, and women ratepayers since 1892. Women vote for parochial assemblies in Guernsey, which is also under Home Rule. In the colonies of Australasia, Canada, and South Africa all duly qualified women possess the municipal vote; in New Zealand and South Australia they have recently attained to the parliamentary vote as well. In Sweden, Norway, Denmark, with Iceland, Russia, Finland, the German Empire, Belgium, Italy, and Roumania, women possess some form of local franchise, under varying conditions. In Italy widows vote for Parliament, by proxy; in Norway mothers vote for school inspectors. Almost as great a diversity of detail exists in the various States of the American Union, and the extension of the parliamentary State franchise to women is increasing, Wyoming having been the pioneer in this matter. If women in the several American States have no other franchise, they usually are empowered to vote on school questions.

The preceding considerations of those movements and tendencies which have been sufficiently long at work in connection with the advancing status of women justify the inference that the woman of the future will be in a sounder state of economic independence than hitherto, and that with better conditions of existence she will be able more effectively to resist the temptations which beset her sex. Much has necessarily been overlooked in this brief survey. The field which has been opened for her activity in connection with the Science and Art Department, the greater freedom of action (not always wisely used) which is now accorded to her in her association with the

other sex, especially for athletic exercises, the facilities for travelling alone, so largely availed of by American women—all these have a tendency to increase her physical and intellectual powers, and, as a natural result, to enable her to bring into the world an improved race of men and women.

But important and valuable as is the development of all those useful qualities in woman, there is a sphere in which her growing influence is of infinitely greater service to mankind, namely, in her functions as a philanthropist; and with a few brief remarks on that phase of the subject we must bring our essay to a close. No person who has followed the philanthropic movements of the last few years can have failed to be struck with the increase of Woman's activity, both private and public, in furtherance of every laudable social enterprise. Not content any longer to help the clergyman or minister with his clothing clubs or periodical charities, women now throw themselves with the whole of their earnest and sympathetic nature into all those comprehensive schemes which the conscience of modern society has of late called into existence. To feed the hungry, to clothe the naked, to save human life on land and at sea, to raise the fallen, to protect the helpless—children and domestic animals—to brighten the lives of the denizens of the slums, to help the children of the poorest and most destitute to partake of some of the enjoyments hitherto reserved for the well-to-do—these, and many others of a like nature, are the good works in which Woman has claimed her right to participate. And here she has not only wrought herself continuously and patiently, and often under conditions hard for refined natures to bear, but by her bright example she has infused new life and spirit into the sterner sex. Public meetings for the furtherance of such objects, which formerly consisted of a handful of men, are now crowded with women of the middle and upper classes; and there, without any sacrifice of modesty, their earnest and persuasive tone wins men's sympathies, and causes them to relax their heart-strings, and, what is of even greater moment, their purse-strings; and thus the resolutions and aims of philanthropy are carried out, which could not be accomplished without the aid of Woman. To say that her domestic occupations in the household and works of charity abroad should constitute the bounds of her activity would not be fair; but every one who reads the signs and knows the spirit of our day must feel that there, where love and peace hold sway, her noblest battlefield is to be found. There will her greatest victories be won, and in such triumphs Man will one day be to her what she has always been to him, a loving and devoted helpmate.

ESSAY XII

THE CONDITION OF CHILDREN

THE direction which has recently been taken to ameliorate the condition of children by the State, or by associations started with that object, has been threefold—protective, reformatory, and recreative, or recuperative; perhaps a fourth should be added, namely, the educational, and on this a separate essay has been written elsewhere by one whose best thoughts and work have been devoted to that end. Regulations have been made by Parliament affecting the employment of children, which prevent them from being used by unscrupulous employers at an age when the growth of the body is arrested by labour suited only to persons of riper years. The Acts relating to education, to factories and workshops, to coal and metalliferous mines, forbid the employment of children of both sexes under eleven years of age, and of girls of any age, in mines; from eleven to twelve girls are prohibited from working above ground at mines, whilst in factories they are only allowed to work "half-time." Boys have rather more latitude. But much remains to be done, for it will be found that, although the number of children under thirteen years at work has gradually diminished since the year 1874, there were still 817,982 working in the United Kingdom whose age varied from ten to fifteen years, when the last census was taken in 1891.* Concerning the protection of children in other ways more will be said presently.

In connection with the reformation of young children convicted of crime, or the victims of neglect or depravity of parents, schools and institutions of different kinds have been provided—reformatories, industrial and truant and day industrial schools. The number of "offenders" in the first-

* Report of the Labour Department, 1894–5.

In Germany the factory inspectors report a steady increase in the employment of child labour from 1882 to 1890, when the total number employed was almost doubled, viz., from 138,143 to 241,737 children between the ages of twelve and sixteen. In Switzerland neither women nor young children are allowed to work at night, and no child is admitted into a factory under fourteen years of age.

named was 3276 in 1859, reached its zenith—6738—in 1881, and in 1894 had fallen to 5587. The number in industrial schools has risen steadily from 1668 in 1864 to 24,683 in 1894, and those in day industrial schools from 287 in 1879 to 3251 in 1894.* These institutions and organisations, to which further reference is made elsewhere,† are maintained out of Government or municipal rates, and are managed by the State or by local authorities; but the movements which more especially characterise our modern civilisation and which are of recent origin are those which inculcate habits of temperance, such as "Bands of Hope," which protect children from the neglect and cruelty of depraved parents and guardians; the "Societies for the Prevention of Cruelty to Children," both local and national; the "Police-Aided Clothing Associations," for clothing destitute children; and the "Summer Camps" and "Children's Holiday Funds," for enabling the young dwellers in the pent-up streets and alleys of towns for a brief period to breathe the purer air of sea and country. Besides these there are also "food associations" of various descriptions. The juvenile temperance societies known as "Bands of Hope" are universal, and are so well known as to need no comment. Societies for the prevention of cruelty to children were first established in isolated towns, and later the "National Society" was founded, with which some of the local ones were amalgamated, whilst others preferred to remain independent. One of the earliest was started in Liverpool in 1883, the members of the committee having been recruited from the local Society for the Prevention of Cruelty to Animals. The following year a branch was founded in London, which in 1889 became the "National Society." These societies put in force the various Acts of Parliament which have been passed for the protection of children, the most important being the Consolidated Act of 17th August 1894. That Act provides for the punishment of parents and guardians by heavy fines or imprisonment for wilfully assaulting, ill-treating, neglecting, abandoning, or exposing children under sixteen years of age in a manner likely to cause such child unnecessary suffering or injury to its health (including injury to or loss of sight or hearing, or limb or organ of the body, and any mental derangement).‡ But the Act is far from perfect. It allows parents or guardians to train children as "acrobats, contortionists, or circus performers," although it forbids that right to strangers—a direct encouragement to practices and

* Thirty-eighth Report on Certified Reformatory and Industrial Schools of Great Britain for 1894. Published in 1895.

† "Crime and Punishment."

‡ For killing children by systematic ill-treatment in order to secure insurance money, the punishment is penal servitude.

amusements entirely unworthy of a civilised community. The "National Association" has branches in 120 towns, and it claims to have protected 156,576 children from various forms of cruelty from the date of its establishment to 30th April 1895. The degrees of culpability in the ill-treatment of children are to be found, first, and worst, in England—Wales next, and then Ireland, whilst London enjoys the shameful privilege of standing at the head of all towns and countries. The rapid progress which the movement is making is best seen from the operations of the Liverpool (local) Society, which began in 1883 by securing protection to 378 ill-used children, and between that year and 1894 reckoned a total number of 18,698 such cases in its calendar. The greater number of cases come under the heads of "neglect" and "exposure" for begging purposes, and some of the worst betray qualities in the parents which could hardly be attributed to savages or to the most ferocious animals of prey. Two such cases will suffice to show the state of "civilisation" in some of our worst slums—one the acts of a man (?), the other of a woman (?):—

"6710. This was a case of brutal ill-treatment to two girls, aged eighteen and thirteen, who lived with their drunken and depraved father. The eldest girl was so seriously bruised through being kicked and beaten with a belt that she had to be removed to the —— Hospital. For this the father was prosecuted, and fined 10s. and costs (*sic!*). Some time after, these children were brought to the Society's Shelter in a deplorable state of neglect, the eldest girl having a cut over the right eye, caused by a kick from her father, who had also struck her and knocked her down, thrown paraffin oil over her, and then attempted to set her on fire. This time he was sentenced to one month's imprisonment with hard labour, and his daughters were cared for by the authorities.

"6229. Four orphan sisters (aged fourteen, twelve, ten, and seven), after their father's death, went to live with an aunt and her husband. The eldest became servant to a policeman's wife, but returned to the aunt's house to sleep. Her mistress found the girl's back in such a condition, being black from shoulders to waist, that she pressed for an explanation, and discovered that, at the aunt's instigation, her brother (aged eighteen) had beaten her with a strap until she bled, and that her aunt often pulled her ears and the ears of her sisters until they bled, then got them on the floor, put her knuckles on their throats, and threatened to choke them. The woman and the children's brother were prosecuted and punished, and the children were received into one of Mr. Müller's homes at Bristol."

These two cases must serve to illustrate not only the experiences of the Societies for the Prevention of Cruelty to Children, but also of some of those of the Police-Aided Clothing Associations, to which attention will be directed presently; but it would be most unfair to the deserving and humane amongst the poorest classes if these examples of cruelty and depravity

were to be considered as typical of the whole, or even of a large portion, of those whose only crime is poverty. The heroism, the self-denial, the genuinely Christian examples which are to be met with in our courts and alleys put to shame even the doings of well-to-do "philanthropists." Nothing is more common than for a bereaved family, it may be mother and children, to find temporary or permanent shelter in the homes of neighbours already overweighted with burdens of their own, and this is but one of many ways in which the adage is verified, that "the poor are the friends of the poor." If there be a record of misconduct in that, as there is in other classes of society, those who have read the reports of the visitors to the homes of the poor know well with what exemplary patience sickness, poverty, and ill-treatment are suffered which would be bitterly resented by those who call themselves the "upper classes."

Another movement akin to the one just named, but having a much wider scope, inasmuch as it embraces the deserving poor, is to be found in the police-aided associations for clothing destitute children. The originator of the movement was Mr. Henderson, the chief constable of Edinburgh, whose name deserves to be handed down to posterity, and from that city it is spreading rapidly all over the country, associations having been formed at Birmingham, Liverpool, Glasgow, &c., &c., and fresh ones being started at short intervals. The *modus operandi* of these societies is as follows:—An order is issued by the head constable to all the police on beat duty, that if they see or have their attention called by others to a child which seems to them to be insufficiently clad, they are to question him or her, being careful to do so kindly, so as not to let the child think it has got into trouble. They must find out where the child lives, and having communicated with their sergeants, the two must visit the child's home, ascertain the nature of its surroundings, and fill up a form, which is sent to the Association, through which further inquiries are instituted—"cross-visiting," as it is called. The child is then sent for and clothed, and the parent or guardian has to sign a paper accepting the clothes as a *loan*, and agreeing not to pledge the same. The clothes bear the mark of the Association, and, as additional security, the head constable issues a notice to all pawnbrokers and dealers in old clothes explaining the situation, and asking their co-operation to prevent the abuse of the charity. The sins of the parents are not visited upon the children, who are clothed in almost all cases; and where it is deemed right the former are dealt with by the police (whose duty also is to see that the child continues to wear the clothes), or by the Society for the Protection of Children already referred to. The clothing is

performed by ladies, who meet regularly at the depôts of the Association where the clothes are stored, and the whole management is absolutely gratuitous. Assistance of various kinds is given by school boards, missions, needlework guilds, and charity organisation societies, and the intimate association of these various bodies with the police in their capacity of the friends of the people is having a tendency to systematise charity, to soften the course of justice, and generally to create a more kindly feeling between the rich who provide the clothes and clothe, and the poor who are the recipients of their bounty. The garments are supplied from head to foot; they are of a good and durable kind for children of both sexes, and bear no outward sign of pauperism or charity.

But perhaps the most interesting of all recent movements for improving the condition of children is the provision of places for recruiting the health of the poor young town dwellers of both sexes. We believe that Liverpool claims the honour of having established the first of these institutions, and although there are at present four of them—three on the Cheshire side for Liverpool, and one on the Lancashire shore for Manchester, two for boys only, one for girls only, and the fourth for the boys and girls alternately of the Liverpool Industrial Day Schools—the most interesting and best conducted is undoubtedly the summer camp for poor boys at Meols, in Cheshire, which is managed and largely supported by a number of cotton-brokers—mostly young men—carrying on business in Liverpool.

The first year of the formation of the camp (1885), which is composed of fine tents, 125 boys from the streets of Liverpool were entertained for periods of a fortnight each; whilst in 1894 the number had reached 743. The boys wear a red uniform in camp, bathe in the sea, are well fed, and are drilled, the camp being under the management of two sergeants, subject of course to a committee; and though they arrive pale and weary, they leave (need it be said reluctantly) in robust health, and set up for a year's work in the city. The girls' camp is a more permanent one, and is managed by ladies. Besides these four camps, there are now several others; poor children from Birmingham being sent to Conway, whilst another camp is maintained by students of Oxford. In addition to the "camp" system, there are other means employed to attain the same end, such as the boarding of town children in country farms for a week or a longer period, and this movement is carried out by means of what are known as "holiday funds," which are becoming more and more general. And, finally, a reference must be made to provision for the emigration of young people from

such institutions as Dr. Barnardo's Homes, and Mrs. Birt's Sheltering Homes for Destitute Children, from both of which considerable numbers of waifs and strays are annually taken to the Colonies, and settled with families in different capacities.

To enumerate, even, the various kinds of organisation to be met with at home and abroad having for their object the welfare of the children of the poor would be impossible, and we must content ourselves with this brief notice of a few of the more recent and remarkable. They point to the rise of a new feeling in society, namely, that the only sure way to raise up a generation of happy workers, who shall be free from the vices and defects of their parents, is to care for them early in life; to teach them, to clothe them, to give them physical health, and to convince them that even the enjoyments of life shall be brought within their reach by those who have been born to a greater share of the world's blessings.

This sentiment, along with the one which inculcates kindness to helpless animals, gives hope and promise to the future of the human race.

ESSAY XIII

HEALTH AND DISEASE

It has been the habit with superficial critics to cast the slur upon medical science and practice that no advance has been made within the past two thousand years; in fact, not since the days of Hippocrates, the great prophet of Physic. One cannot deny that up to the beginning of the present century this stigma contained much truth; but with that time came a remarkable enlivenment of enterprise and research, stirring up the old pools of learning and rattling the dry bones of medical theory in a manner which would have astonished some of our sober and sedate medical forefathers. Discoveries of importance have been frequent, energetic research has been turned in all directions, and the revelations of natural and physical science have been taxed to yield their quota towards refitting medicine on a firm and scientific basis.

Scheme after scheme has been evolved, often on purely theoretic grounds, to be put aside or supplanted, the subject of disease being a favourite one on which to speculate; but the plan which has been most serviceable has been the result of the wide circulation of medical reports of cases, so that deductions might be drawn, not from the limited observation and knowledge of single individuals, but from the comparison of unlimited records freed from personal bias.

The predominant evils in the medical practice of the early days of the century lay in the system of overfeeding and overdrugging which generally prevailed, also free depletion by bloodletting. Nature's efforts at cure were unrecognised, neglected, and hampered. At this stage Hahnemann propounded the system of homœopathy, which, however much it was and is dissented from by the bulk of the medical profession, had at least the effect of opening the eyes of the observant to the fact that nature is ever making efforts to rectify defects and cast off diseases. It also had the effect of making the profession at large doubt the advisability of accepting teachings which came recommended only by their age and universal usage.

The appreciation of the system is found in the confidence which is still placed in it by great numbers of people and by munificent donations to homœopathic hospitals and dispensaries. The results produced by homœopathy were not obvious at once; gradually, as the century grew, the old plan of doing as our fathers had done gave place to investigation; in the matter of drugs, each one had to justify its retention or be cast aside if useless. To-day drugs no longer require to be vile to be serviceable.

Besides the change in medicines there has been a change in the methods of administering them. Many very competent men have devoted much time and careful study to defining the actions of drugs, and observing the conditions under which those drugs act most advantageously, and, as a result, old methods have been improved and new ones introduced. Among some of the more important changes, it may be mentioned that inunction, the method of applying medicines by the skin, formerly only used for mercury, has been much extended and improved upon in its uses; that many remedies are applied in this way, not only on the skin, but into and under it by the hypodermic process of injection. This was practised at the beginning of the century by Majendie, a French physiologist, but not adopted in medical treatment till the time of Dr. Alexander Wood of Edinburgh, who revived the principle about the middle of the century, and gave it to the profession in its present form. It is of great advantage in administering powerful drugs with accuracy and sedatives with despatch. Inhalations of volatile medicines and others made into fine spray, so as to bring them into direct contact with the diseased air-passages, constitute a distinct advance. The demand for pleasanter forms for the exhibition of drugs has called forth competitive efforts on the part of firms of chemists, who now supply compressed drugs and tabloids containing the recognised dose of unpalatable and bulky drugs, whilst others, liquid and solid alike, are put up in agreeable form as capsules of gelatine or other easily digestible covering.

Increased knowledge of chemistry has been of great service in throwing light upon the action of medicine, and has opened out wide fields from which to stock the physician's drug-chest; from the great number of the substances derived from the coal-tar products many compounds of much usefulness have been introduced within the past fifteen years.

Since the general acceptance of the germ theory of diseases, the result of a long series of investigations, beginning with those of Linnæus (1730), and culminating, so far, with those of Professor Koch of Berlin, the system of treatment of some

complaints has altered, notably in regard to the use of serum injections. In certain cases these are used mainly as preventives, in others for neutralising the poison or its effects in the system. Cholera and hydrophobia, which has been made a special study by the eminent Frenchman Pasteur, are included under the former, diphtheria under the latter form of diseases so treated. It is believed that these antitoxines, as they are called, act in the system by neutralising the activity of the disease germ, or by killing the poison generated by the germ in its multiplication and growth. However that may be, in the face of the statistics furnished by some of the ablest men, the value of this antitoxin system can hardly be questioned.

From the city of New York we get the following statistics dealing with the death-rate from diphtheria and croup before and since the introduction of the antitoxin treatment. For the purposes of comparison, only the first three quarters in each year are shown, as the statistics refer only to the first three quarters of 1895 during which the antitoxin treatment was used, and that not universally; otherwise the statistics should have appeared even more favourable:—

In 1891	there were	3686	cases, with	1349	deaths =	36.59	per cent.
„ 1892	„	4158	„	1640	„	39.44	„
„ 1893	„	4721	„	1763	„	37.34	„
„ 1894	„	7446	„	2284	„	30.67	„
„ 1895	„	7921	„	1643	„	20.74	„

These figures were supplied by the President of the New York Health Department to the Mayor of the city.

At the meeting of the British Medical Association in London in 1895, Dr. von Rancke, of Munich, gave statistics comparing the mortality from diphtheria at the clinic of the University of Munich before and since the introduction of the serum treatment:—

1891	mortality	46.0	per cent.
1892	„	56.2	„
1893	„	46.0	„
1894, till September 24	„	57.0	„
Sept. 24, 1894, till July 1, 1895 (serum treatment)	„	17.7	„

Professor A. Baginsky, Berlin, treated 525 patients with antitoxin:—

Previous mortality	41.0 per cent.
Present mortality	15.6 „

And during a period when the antitoxin supply ran out the death-rate went up to 48.4 per cent.

In the direction of more accurate diagnosis of disease much advance has been made, aided by improvements in the micro-

scope, &c., chemical discoveries, and an extended knowledge of physiology. Among the instruments which may be mentioned as having assisted largely is the stethoscope, practically the discovery of Lænnec, a French physician, in 1819, who by its use added to the knowledge of chest diseases; in fact, laid the scientific basis for the study of those complaints. A very able follower of Lænnec in this country was Dr. C. J. B. Williams, to whom we owe much of the knowledge we possess concerning phthisis. The speculum, an instrument for examining different orifices, gave the key to the laryngoscope for throat examination, and efforts to explore further were hampered by the difficulty in transmitting reflected light. Coincident with the development of electric knowledge for lighting purposes came the endoscope, enabling examinations of the interior of the stomach, bladder, &c., to be made under the influence of a strong light with the minimum of heat. Chemistry and the microscope have helped on the study of the kidney diseases, and accurate information can be obtained in a few moments which was not available fifty years ago.

Diseases of the brain and nerves have a fascination for observers which certainly does not diminish with increased information. Anatomical, physiological, and clinical studies have been pursued unceasingly on the different parts of the nervous system, with the result that diseased conditions hitherto but little or not at all understood have been explained and classified, and treatment is possible on a sounder basis. Anatomical study of the parts of the brain and the nerves, aided by physiology, has been successful in showing the part of the nervous system which controls and performs certain actions. Ferrier and other observers succeeded step by step in locating the different portions of the brain which govern different functions, so that, supposing the muscles of one limb or portion of a limb paralysed, we can now tell exactly where the damage exists in the brain when that organ is the source of the paralysis. Among others who have helped on the study of ailments of the nervous system, notably are Brown-Sequard and Charcot in France, Gowers and Hughlings-Jackson in London. To the last named, and also to Clifford Allbutt, we owe the application of the ophthalmoscope in examining the retina, thereby giving valuable information as to the state of the brain. The circulation of the brain and retina being very intimately associated, changes in the former show often parallel changes in the retina, either in the circulation alone or in the nervous structure of the optic nerve and its expansion in the retina. This application of the ophthalmoscope was made in 1860.

In the year 1823 the stomach-pump was introduced, although an earlier origin is rightly claimed for it. This instrument was found useful, especially in poisoning cases, but it has since been modified and applied to other purposes: for the cleansing and washing out the stomach, and also for feeding refractory lunatics and others who, from such complaints as paralysis of the throat, are unable to swallow.

Nursing, which in the beginning and for some years onward in the century was in a most chaotic condition, received a great stimulus from the energetic and self-sacrificing action of Miss Florence Nightingale, who practically created the present art of nursing and popularised the nurse's profession. She did an enormous amount of work in the cleansing and ventilation of hospitals, and by these means and others effected such a change in the system of dealing with the sick and wounded there that the rate of mortality sank rapidly. Training schools for nurses were started, and from these were sent out well-trained women who could impart their knowledge to others, so that the whole of this and other countries were quickly supplied with nursing institutions. The improved system was not confined to the general hospitals and those who could pay for the luxury, but made its way into the workhouse hospitals, first by private munificence, and then as a charge on the rates.

The clinical thermometer was introduced by Sanctorius in the beginning of the seventeenth century, but it was not generally used until long after; and we find Dr. James Currie, in 1798, introducing a self-registering thermometer of his own invention to be used in judging of the effect of cold water on the system in fevers, as practically he was the inventor and populariser of the hydropathic method of treatment in this class of diseases, to which further reference will be made hereafter. Accurate systematic observation of the temperature of the body in diseased conditions was not carried out thoroughly until far on in the present century, when study of the methods of lowering body-heat when excessive was made, and has been continued until the present time; the medicines and methods recently introduced making it possible to save life and reduce body waste due to the destructive effects of high temperature.

In regard to electricity, which has been turned to so many purposes commercially and economically, medical men are not behind. They now use it in various ways for purposes of diagnosis in many diseases of the brain and nerves. It can also be used in the treatment of many affections of paralysed limbs, where the function of the muscles can be artificially maintained by the electric current until nature has had time to regain her powers; also as an effective stimulant and tonic agency.

The introduction of the clinical thermometer revolutionised clinical observation and practical therapeutics. By its means we are enabled to observe accurately the course of a fever, and to control it to a great extent by medicines and methods whose effects can be carefully registered. In another respect medicine has made progress by the more accurate diagnosis of disease. We can now decide when the physician may and ought to give place to the surgeon; the physician determines when his medical treatment has reached its limit, and calls in the aid of a surgeon to deal with such forms of disease as do not come strictly within his province.

One of the faults found with medical practice in London at the beginning of the century by a noted French doctor was, that there was a great tendency to specialism, and hospitals for special diseases. However much of a disadvantage this may be, the advantages to the community are great, as putting at their command the services of persons skilled by long-continued study and experience in special complaints.

Great as has been the advance in medicine, the progress in surgery far outshines it. Previous to the introduction of anæsthetics, practically the methods and results of our ancestors were unaltered. Surgery was limited by the deftness of the operator and the endurance of the patient. Dirt, bad ventilation, and worse nursing made the surgical wards of hospitals hotbeds of erysipelas and gangrene, and the consequent mortality was very great.

In the year 1800 Sir Humphry Davy made experiments with nitrous oxide gas (laughing gas) in the production of insensibility, and advised its employment in surgery, but it was not much used. Faraday, in 1818, made similar experiments with sulphuric ether. Several physicians, especially in America, pursued these experiments, but with little good results, until, in 1844, a surgeon-dentist named Wells, in Hartford, Connecticut, applied ether in the extraction of teeth. It was Dr. Morton, however, in Boston, U.S.A., who first applied it, in 1846, to general surgical operations. Sir James Simpson used ether in the beginning of 1847, and towards the end of that year he employed chloroform, preferring the latter. Ether is much used in America, and chloroform in the British Isles.

The wonderful effects of this discovery can only be gauged by the enormous impetus it gave to surgery; surgeons, whose main aim had been rapidity of operating, could now turn skill and attention to matters previously out of their reach.

In the present day we can have little conception of the torture by anticipation alone which patients had to endure in nerving themselves up to undergo an operation in cold blood for

some growth or disease which was sapping their vitals and must be operated upon to save life, followed as it was by the dreadful torture on the operating table. When we consider the trifling honours so grudgingly bestowed upon a man who was the means of saving so much suffering and so many lives, and compare it with the free showering of favours on those in other walks of life whose efforts are directed towards destruction of comfort and happiness and life itself, we can hardly help questioning the boasted advance of the nineteenth century in civilisation.

With the freer performance of operations, it became more apparent that wounds did not always heal as they ought to do, and some sort of poisoning of aerial origin was suspected. Professor Lister, of Edinburgh, taking advantage of the knowledge gained in other directions on the subject of germs, applied this knowledge to his own department. He introduced the antiseptic method of operating and treating wounds (the application of substances which check or prevent putrefaction, such as carbolic acid) associated with his name, and his success caused others to think and observe; but although his methods are not carried out now in their entirety, to a large extent the most important points of his teachings remain, especially with regard to perfect cleanliness in all those who come in contact with open wounds, and in all the surroundings.

By the aid of chloroform and antiseptic methods it has become possible to explore the most important organs and cavities of the body, previously a sealed book to surgery. Opening the abdominal cavity before antiseptic precautions were observed was often a fatal proceeding; afterwards such operations became practically safe, and the death-rate fell to a mere fraction. A surgeon of great eminence, early in the century, expressed himself as thankful that the kidneys were out of reach; but even these can be reached, and surgical affections treated. In like manner the skull and its contents, which were held sacred from interference, have been invaded by the surgeon; tumours of the brain and abscesses have been dealt with in many cases satisfactorily, but not as yet with as much safety and success as could be desired. At present the most brilliant results are obtained in the surgery of the abdominal organs, notably the stomach and bowels, from which diseased portions have been removed, and the defective portion healed in a manner little short of miraculous. Even the gall bladder comes in for a share of attention where it is at fault, and its calcareous contents are removed with freedom. Cavities caused by disease in the lungs can be opened and drained, and even small portions of diseased lung have been removed.

The chief progress of surgery has not been altogether confined to the performance of brilliant operations. There has been at the same time a conservative influence exercised to prevent the security which anæsthetics and antiseptics have conferred being abused by the too frequent resort to the use of the knife. The power and inclination of nature to repair wounds and defects have been recognised in their relation to surgery as well as medicine. The great value of time and rest as curative agencies has been constantly instilled into the minds of young surgeons, whose inclination generally is to set nature right at once wherever she may be at fault. Conservative surgery finds its province more especially in dealing with diseases of bones and joints, for many of which conditions limbs were formerly sacrificed. Now the tendency is, by the use of rest, and by securing absolute fixity of the diseased limb in ingeniously contrived splints, to permit of nature effecting a cure. In this manner diseased states of the hip, knee, and ankle joints can be treated so as to preserve the use of the leg when treatment is undertaken in early stages of the disease of these joints. By the artful nature of the contrivances the treatment can be carried on whilst the patient is allowed exercise and free access to the fresh air.

Somewhat after the same method, that terrible complaint, spinal disease, so fatal and deforming in children, can now be treated so as to save a great deal of the life sacrificed, grievous pain, and much of the deformity. The chief part of the credit for this advance is due to an American surgeon named Sayre, whose invention, the plaster-of-Paris jacket, by its cheapness and ease of application, brings the treatment within the reach of the poorer classes, amongst whom the ailment is most common.

Another specific advance was made about the year 1870 by the introduction of skin-grafting by a Frenchman named Reverdin, for use in large sores where the healing process of the skin fails, owing to the extent of the wound to be closed, as in large burns or scalds. Mr. Pollock introduced the process into England, and it was rapidly adopted here.

In painless methods of performing smaller surgical operations, the employment of cocaine very rapidly gained ground, coming into use in the year 1884, and extending more especially in operations on the eye. Some modifications of the form in which to use it have been made to eliminate the smarting sensation, and render it as nearly absolutely painless as possible. Ether, besides its anæsthetic properties, possesses the power, by its rapid evaporation, of freezing the part on which it evaporates, especially when sprayed on in a finely divided

vapour; and this quality was taken full advantage of by Dr. B. W. Richardson, who found that it allowed of minor operations being done rapidly and painlessly.

In the year 1869 the same eminent observer, Dr. (now Sir) B. W. Richardson, read a paper in Norwich on the subject of transmitting strong light through the less dense portions of the body, and made experiments with various methods of illumination. Passing the light through the hand and fingers, he could fairly define the bones; and even a foreign body buried in the hand was located by means of this transmission method. In his hands the magnesium light gave the best results.

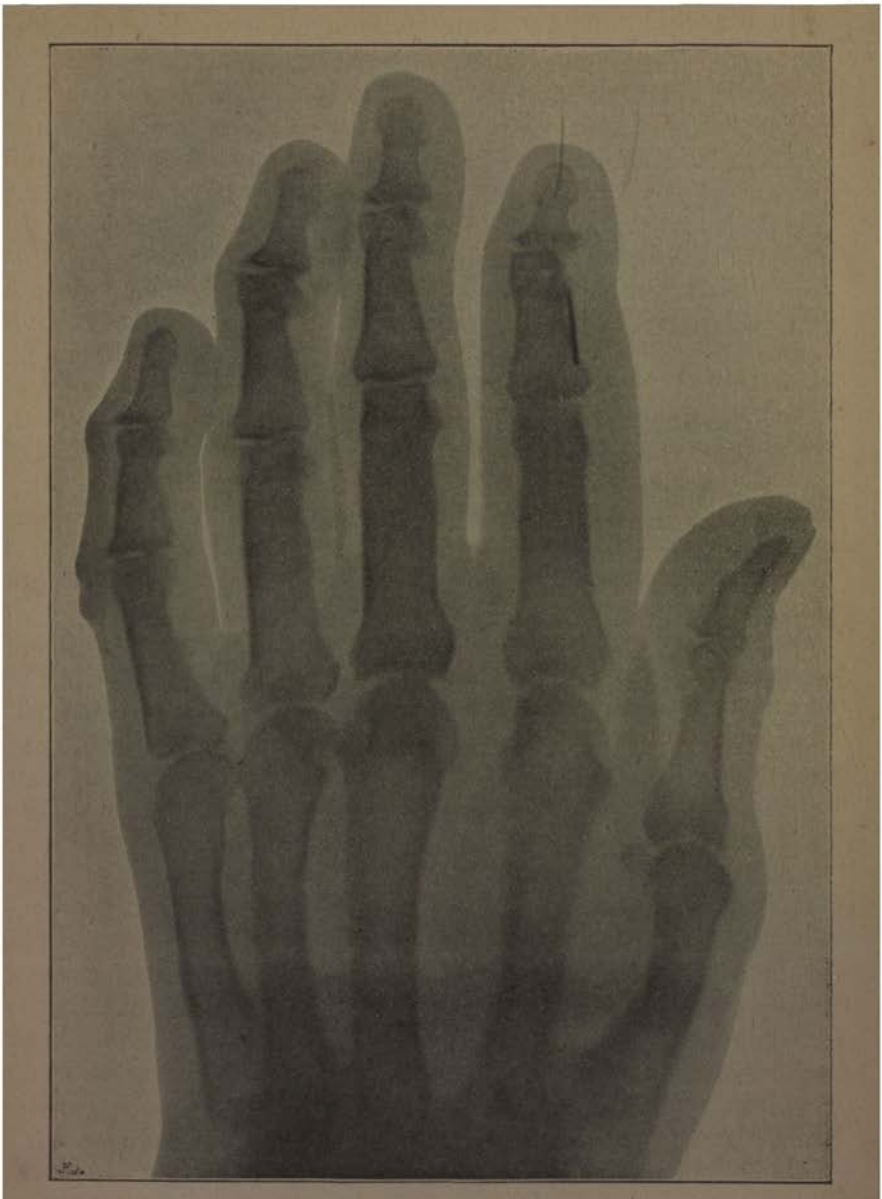
In 1875 Dr. Ultzmann, of the Vienna University, made a further step in advance, and in a paper on the use of photography in medical studies, mentioned among other things, on the authority of Dr. Vogel, that an eruption of smallpox had been made evident by photography before it actually came out. Although no one could observe as yet anything on the skin of the patient, the negative plate showed stains on the face which perfectly resembled the variolous eruption, and twenty-four hours afterwards the eruption became clearly evident.

With the beginning of the year 1896 came a new development, in the application of Professor Roentgen's discovery of the possibility of photographing hidden structures by means of the rays (X) from an electrically excited Crookes' tube. For use in surgery this discovery seems to have great possibilities. The softer structures are transparent to the rays, allowing the more dense, such as bones or foreign substances, to stand out clear and distinct. Already the discovery has been applied to the defining of the exact position of bullets, needles, &c., in the limbs (see Plate), making their extraction a much easier process; and even the body has been penetrated so as to disclose the presence of calcareous deposits in the bladder and kidneys, but it is still doubtful whether the gall-bladder will reveal its contents, whilst cancerous growths are undefinable, as they transmit the rays with the same ease as sound tissues. It is to be hoped that this aid to diagnosis may not lead to surgeons resorting too freely to interference with safely located foreign bodies, where these are giving rise to no trouble, nor likely to do so.

It was thought by some that these X rays might be found to have some specific power over bacteria in destroying them, but after several tests carefully applied this hope does not seem to be justified. The discovery is, however, likely to lead to new developments day by day, and, as already stated, it has great possibilities in the future.

Previous to the present century anything like general care of

matters of public health did not exist. Scarcely any organised effort had been made for the diminution of sickness or rendering



NEEDLE IN HAND.

(Reproduced by permission of the London Stereoscopic Company from a Skiagraph by Dr. Sydney Rowland.)

the filthy homes of the people more cleanly or their dirty habits better. The earliest sanitary laws had been passed against such general epidemic diseases as plague, cholera, and smallpox, but

no properly organised effort was made before the passing of the Public Health Act of 1848. Until the great Registration Act of 1836 was passed there was no reliable means of gauging the havoc wrought on the community by preventable diseases. Since then sanitary legislation has made great strides, with corresponding benefits to the national health. We now possess materials for computing the average duration of human life, and it has been found to have lengthened considerably since the methods of living and the surroundings have been made more healthy.

Sanitary science, which is the basis of public health administration, has extended its boundaries in many directions, receiving additions from the study of the microscopic causes of disease, from that of the statistics of mortality, and from the more accurate knowledge of the causes, modes of spreading, and most effective means of restricting and preventing diseases. A certain amount of stimulus is given to the furtherance of the growth of sanitation by the fact that the prevention of disease is more economical than its cure.

The evidence that sickness and death are to a certain extent preventable is of various kinds :—

1. Human life has gradually increased in average duration coincident with improved sanitary conditions.

2. Scurvy was formerly a common disease, but on its cause becoming known preventive measures were adopted, and now the disease is rare.

3. Leprosy was common in this country, and is now stamped out by isolation.

4. Drainage has removed intermittent fevers from this country.

5. In many countries the mortality from consumption has been reduced by improving the conditions of living, drainage, and food, and making better houses. Now that the actual germ-cause of the disease is known, more complete measures may be adopted so as gradually to stamp out this disease.

6. The reduction in smallpox mortality, and the comparative immunity from cholera, black death, plague, and sweating sickness, bear witness to the efficiency of the preventive measures adopted.

By the working of the Registration Act and the aid of Royal Commissions, something had been learned about the causes of death in the population. It was shown that more deaths were caused annually by home-made epidemics than by foreign invasions, such as the cholera in 1831–2. It began to be recognised that communities had duties towards their members and towards other communities in regard to matters

of health, and with this broadened idea of public responsibility, it was felt that adequate organisations should be provided to instruct, direct, and even to coerce ignorant or wilful members of each community.

From this beginning the function of legislation spread its boundaries until it arrived at the present system of sanitary observation and administration, and there was a gradual growth of the powers of local authorities. By the Act of 1848 a General Board of Health was established, with power to apply the Act to any place having a known and definite boundary. These provisions were freely taken advantage of, and with them the regulation of such matters as the laying out and sewerage of streets, construction and drainage of houses, provision of a water-supply of towns, and removal of nuisances.

In 1858 the Local Government Act replaced the Act of 1848, and remained in force until 1875. Under the Public Health Act of 1872 the whole country was divided into rural and urban sanitary districts, and the Sanitary Acts made applicable everywhere. The Public Health Act of 1875 repealed and consolidated all the previous statutes relating to sanitary law outside London, and this forms the basis of the Local Government Act of 1894. There were in existence 1030 urban and 574 rural sanitary authorities at the beginning of 1894, and under the Act these are continued in force as urban and rural district councils respectively. The powers and duties of local authorities now deal with matters of local health and general sanitary conditions of the district. They must provide sewers and purify the sewage; provide a supply of water proper and sufficient for public and private purposes; prevent the pollution of rivers by sewage, solid matters, manufacturing or mining refuse; or the pollution of wells, public or private, used for drinking purposes or for the manufacture of drinks.

They regulate the making of streets, repair and cleanse the same; cleanse earth-closets, privies, ash-pits, and cesspools; and require the periodical removal of manure or refuse matter from stables or other premises. They must provide cemeteries, and may also lay out pleasure-grounds and maintain public walks and other open spaces. The sanitary authorities are endowed with powers bearing on dwellings and their surroundings, as well as the maintenance of factories and workshops in a proper sanitary condition, exercising supervision over the construction, drainage, cleansing, and water-supply; also over the occupancy of cellar-dwellings and registration of common lodging-houses. They have the power of abating nuisances, in whatever locality such nuisance may be found—in the water, on land, or in the atmosphere.

Offensive trades, such as soap-boilers, tallow-melters, &c., require special permit from the authorities in urban districts. Slaughter-houses are licensed and inspected. Provision is made for the building and maintenance of hospitals for patients suffering from infectious diseases.

With a view to limiting the spread of disease, authorities can take advantage of the Notification of Infectious Diseases Act, 1889, and also the Infectious Diseases (Prevention) Act, 1890, which gives powers to inspect dairies and prevent the sale of milk where it is suspected that disease may be spread by such milk; cleansing and disinfection of premises, bedding, and clothing; retention and burial of persons dead of infectious diseases, &c. This Act also renders it illegal to use any public conveyance for the removal of any person suffering from infectious disease.

With regard to the dwellings of the working classes, The Housing of the Working Classes Act, 1890, gives certain powers, so that where the medical officer of health reports to the local authorities that for certain stated reasons any houses, courts, or alleys are unfit for habitation, they may proceed to make a scheme for the improvement of the same. Before the scheme can come into operation, it has to be confirmed by provisional order, which requires the sanction of Parliament. There is also power as to closing unhealthy dwellings.

Besides this, sanitary legislation has taken other directions, as in the right to interfere between parent and child, in limiting the industrial uses of children, and requiring parents to have children vaccinated; to interfere between employer and employed in regard to the safe and sanitary condition of the employment; between seller and buyer in putting restrictions on the sale and purchase of poisons; making it a public offence to sell adulterated food, drink, or medicine, or to offer for sale meat unfit for human food. This applies also to the manufacture and sale of agricultural products intended for use on farms. As a result of all this legislation we have a right to look for some substantial benefit, and we find it in the largely diminished death-rate shown in recent years. As a remarkable instance of the benefits of efficient sanitation may be mentioned the city of Munich. Previous to the year 1859 there were no sewers nor organised cleansings; the water-supply was from wells. Mortality from typhoid fever, 24.2 per 10,000. From 1860–65 reforms were begun by cementing the sides and bottoms of porous vaults and cess-pits, when the rate of mortality fell to 16.8; 1866–73, partial sewerage, typhoid mortality 13.3; 1874–80, sewerage continued, mortality 9.26;

1881–84, continuation of sewerage, much more complete, mortality 1.75. It is now claimed that typhoid fever has disappeared from the city, the only cases occurring being such as have contracted the disease elsewhere. Concurrently with the improvement of the sewerage, there has been the introduction of pure water from other sources than formerly. Dirt and filth have been long associated with health in certain ranks of society, it being popularly regarded that where you saw a dirty child you saw a robust child; this to a certain extent might be so, as the weaker ones, being unable to cope with the surroundings, simply died off.

The following table shows graphically the influence of cleanliness alone in Buda-Pesth during the period between the years 1863 and 1877 inclusive, as noted by Dr. Joseph von Fodor, in typhoid and cholera:—

1. *Influence of Filthy Houses.*

Deaths from cholera per 100 houses during the above period, when the interior of the dwelling was	Very clean	92
	Clean	199
	Dirty	268
	Very dirty	402
Deaths from typhoid per 100 houses when the interior of the dwelling was	Very clean	165
	Clean	177
	Dirty	182
	Very dirty	356

2. *Influence of Filthy Yards.*

Cholera deaths per 100 houses where the yard was	Very clean	188
	Clean	214
	Dirty	263
	Very dirty	389
Typhoid fever deaths per 100 houses where the yard was	Very clean	159
	Clean	186
	Dirty	208
	Very dirty	282

This strongly suggests the use of soap and water, and if the amazing growth of the number of soapworks and the quantity of soap put on the market is any criterion, mankind should be becoming a cleaner, and therefore a healthier, race; but cheap and good as the material supplied is, there is an enormous crust of dirt to be washed away, especially among the lower class of town-dwellers, amongst whom, notably in this country, cheap beer and thriftlessness fix a barrier to all progress.

The recognition of the germ-causation of many forms of disease disclosed the fact that not filth alone was the important

factor in the production of these diseases, but it certainly acts as a suitable bed for the growth of the germs and a nursery whence, when thoroughly saturated, disease may spread to healthier localities.

To show the effect of improved sanitary conditions and better water-supply we may quote the case of Chicago. In 1893 the death-rate was 16.91 per 1000, standing next to Berlin as the healthiest of the large cities of the world. The deaths from typhoid fever in that year were only 670, as against 1997 in 1891 and 1489 in 1892, and this improvement was mainly due to better sewerage and drinking-water. The gravest lesson in this connection has, however, been read to the civilised world by the cholera epidemic in Hamburg. Cholera attacked the city of Hamburg in the middle of August 1892, and raged till the latter part of October of that year; 18,000 people took the disease, of whom 8200 died. 1.3 per cent. of the inhabitants died in that short space of time.

Hamburg and Altona are so intimately connected that the division boundary is not very clear, even to the inhabitants themselves; but the cholera defined the limit by killing 1.3 per cent. in Hamburg, with an impure water-supply, whilst in Altona, with its filtered Elbe water, only 0.2 per cent. of the population was carried off by the disease. In many instances establishments with their own wells were spared, although the inhabitants mixed with those outside. The Alsterdorf Institute, with 575 inmates; the Central Prison, with 1100; and the Pestalozzi Home, with 94, remained free from cholera; while the lunatic asylum of Friedrichberg and the workhouse, equally sequestered, but obtaining water from the common source, were freely attacked. The accepted opinion of the cause of the epidemic is as follows: The water-supply of the town was procured mainly from the Elbe, and that within the city; the river is tidal; sewage was discharged into the Elbe at Hamburg, and even above it; 1892 was a dry year; the Elbe had no force of current to wash away the sewage at low-water; consequently the river at Hamburg became very foul. Cholera germs from some of the ships entering the port polluted the water with which the town was supplied. Filtration of that water was very imperfect; hence the rapidity with which the disease spread and became general. The lesson is obvious. Drinking-water should be clean at its source, and its purity should be preserved throughout. Hamburg has acted on that principle, for before the summer of the following year a new water-supply took the place of the old, thorough filtration was provided, and there has been no return of the epidemic.

One of the most fascinating chapters in history from a scientific standpoint is the account of the revolution worked by Edward Jenner. No greater monument exists to the memory of any man than that which he created for himself in the institution of vaccination. Till the advent of Jenner's discovery a large proportion, probably one-twelfth, of humanity was swept away by smallpox, and many survivors left blind and maimed by it.

In 1798, after careful study, Jenner gave to the world his observations on the subject of vaccination, and seldom has any discovery been given over to the public in so complete a form; happily this discovery has not belied the claims made for it by its discoverer.

It is unnecessary to justify this proceeding at this late date, as all thinking people have long since been convinced upon the subject, but it is amusing to look back at the character of some of the evidence which was brought forward in opposition. It was alleged that people assumed the nature of the ox, some developing the facial appearance, and others the hairy skin, while others were alleged to walk on all fours and make noises like a cow, as the result of the use of lymph taken from cattle. This reminds one of the present idea held by the credulous and imaginative, that sufferers from hydrophobia bark like a dog.

The practical outcome of vaccination is, that whilst at the beginning of this century 3000 people per million perished annually from smallpox, the number rapidly declined after the introduction of vaccination, becoming less and less as the proceeding became more general.

	Deaths per Million.
At the close of the eighteenth century there were in England, from smallpox annually	3000
From 1841 to 1853 there were	304
„ 1854 to 1863 „	171
„ 1864 to 1877 „	251
„ 1878 to 1887 „	54
In Sweden—	
From 1774 to 1801 there were	1973
„ 1802 to 1816 „	479
„ 1817 to 1877 „	189

Smallpox contracted by those who have been vaccinated is very much less fatal, according to the efficiency of the vaccination.

The following table was compiled by Mr. Marson, whose experience of smallpox ranged over a long period and large

numbers of persons. It gives the percentage death-rate as observed by him among—

	Per Cent.
Unvaccinated	35
Stated to have been vaccinated, but showing no scar	23.57
Vaccinated, showing one scar	7.73
„ „ two scars	4.70
„ „ three scars	1.95
„ „ four or more scars	0.55
„ having previously had smallpox	19
„ „ badly marked scars	8.82
„ „ well-marked scars	2.52

This latter table carries its own lesson on its face, but in the case of the previous one much has been made of the fact that the improvement in death-rate is simply harmonious with improvement in general sanitary measures, and therefore dependent upon them rather than upon vaccination.

In 1887–8 smallpox visited the town of Sheffield and attacked a large number of people. It appeared as though those opposed to vaccination had scored a point on this occasion, as Sheffield was a well-vaccinated town at the time. A local Government inspector made a most searching inquiry on the spot. Mr. Ritchie stated of the report in the House of Commons, that "a more able and exhaustive report was never laid before the House since the question had been in debate." The total number of cases attacked up to March 31, 1888, was 6088, of whom 590 died.

Of the 70,000 children under ten years of age—

	Per 1000.
Attack-rate among vaccinated was	5
„ „ unvaccinated	101
Death-rate among vaccinated	0.09
„ „ unvaccinated	44

Giving vaccinated 20-fold immunity from disease and 480-fold protection against death.

Of the children living in the houses actually invaded by smallpox, 78 per 1000 of the vaccinated were attacked, and 869 per 1000 of the unvaccinated; the death-rate among the vaccinated being 1, and among the unvaccinated 381, per 1000.

Persons over ten years of age—	Per 100,000.
Unvaccinated	5100 died.
Once vaccinated	100 „
Twice vaccinated	8 „

Among the police ten took smallpox; then all the others were revaccinated, and no more took the disease.

Of the 290 people employed by the Post Office who were all revaccinated, not one took the disease.

As proof of the thorough belief in vaccination of those who have most to do with smallpox, all attendants in smallpox hospitals must be vaccinated and revaccinated as a rule, not as a law; and so protected, they hardly ever contract smallpox, although constantly in contact with it.

All these reforms were not brought about in a day. The education of the minds of the people to recognise that filth and dirt generally did not mean comfort and health took some time, and even then came the chief difficulty, in moving the Legislature to take upon itself the duty of giving effect to the needed reforms. The battle was practically won when the late Lord Beaconsfield declared, in speaking on the opening of model dwellings in 1877, that "the health of the people is the first claim upon the statesman."

In order to judge generally of the improved condition of the population in regard to the incidence of disease, we ought to be able to show by statistics of the amount of sickness a lessening of the yearly average per individual, but no such figures are procurable, and we can only judge by the death-rate, that as there are fewer deaths there is proportionately less sickness.

The mortality statistics of the earlier part of the century are most unreliable. A few examples will show the general improvement which has taken place during the second half of the century. The mean annual English death-rate was—

	Per 1000.
From 1841–50	22.4
„ 1851–60	22.2
„ 1861–70	22.5
„ 1871–80	21.4
„ 1881–90	19.1

In London—

From 1861–70	24.4
„ 1871–80	22.5
„ 1885	19.8
„ 1895	19.5

Population, 4,392,346.

In England and Wales there were—

48 fatal cases of smallpox in 1891
23 „ „ 1890
16 „ „ 1889

The previous smallest record was—

275 fatal cases of smallpox in 1886

At the rate prevailing in the beginning of the century, London alone would have contributed 13,000 deaths from smallpox annually.

A word in regard to the management and treatment of those mentally unsound, in which considerable advance has undoubtedly been made. Methods of living having changed so markedly of late, the great strain of living at high pressure seems to have had the effect of disturbing the mental balance of many, if we may judge from the returns of the Commissioners in Lunacy. In 1844 there were 21,427 individuals declared to be of unsound mind. In 1894 (1st January) there were 92,067 in England and Wales. Making allowance for the increase in the population, we still have a large proportion to account for. There is more accommodation proportionately for lunatics, and probably more are sent to asylums on that account who otherwise might have been allowed to remain without restraint. Also, the asylums are now recognised as mental hospitals rather than as places solely for restraint or security. As regards the actual increase in proportion, it is a curious fact that the larger proportion of the increase comes from the agricultural labouring class, which hardly harmonises with the idea that the keen struggle for existence is to be held accountable for much of the present lunacy. No doubt some persons would attribute it to the effect of the monotony of country life upon brains which are less slothful than formerly, just as it is held that in the Arctic regions, where there is long seasonal darkness, the advance of civilisation and human activity is accompanied by an increasing proportion of insanity. The question is, however, still too obscure to justify much speculation. That by far the greater part of the insanity is due to drink and religious aberration cannot be doubted.

And, finally, in reference to the question of worry and overwork, it would be unfair in a treatise of this kind, dealing as it does with many of the agencies that make for civilisation, if the question of hydropathy were passed over without some notice. No doubt the application of cold water, first raised to a branch of the medical profession by Priessnitz, has been, like other phases of that profession, frequently reduced to an absurdity, but it must be regarded, in its effects upon the system generally, much in the same light as, at the commencement of this essay, we considered homœopathy. Whilst at first the resort to professional deceptions, if we may be permitted to call them so, led to severity of treatment and forms of abstinence which were ludicrous in the extreme, of late years some of the hydropathic establishments have become little else than hotels, the indulgence in intoxicants being carried on in

secret, owing to the necessity of dispensing with a license. But, after all, the system represented the principle, to which we have already referred, of giving fairplay to the curative powers of nature by substituting for the artificial conditions of town life, with the accompaniment of continuous "physicking," fresh air, healthy exercise, and moderate living, and the professors of the two new systems, hydropathy and homœopathy, soon found it useful to adopt the advantages of both. Hydropathy possessed a great moral influence. Many of those who resorted to the establishments were, and still are, persons whose brain suffers from the consequences of overwork, as well as from less creditable causes. Such persons are often on the verge of insanity, and they benefit by the change in recovering will-power, and are able on their return to daily life to exercise greater control over their actions.

Taking all in all, therefore, the recent improvements in medical, surgical, and sanitary science have exerted a potent influence upon the human race. The first two have diminished human suffering and extended human life. The latter, not less than the moral influences tending in the same direction, has lessened intemperance and immorality, improved and cheapened the various foods, aided in procuring cheaper clothing, provided more and healthier recreations, better houses and drains, purer water and air. Much has also been done for humanity by the increase of care and skill in hospitals; improvements in the treating of the sick—even the poorest—in their own homes, through the education and training of competent nurses; and, lastly, by the education of parents in the knowledge necessary for their own health, as well as for that of their offspring.

That these reforms and improvements will continue, if they do not progress with even greater rapidity in the future, there can be no manner of doubt; and whatever uncertainties may exist or questions arise in regard to some of the other agencies at work, the adage, *Mens sana in corpore sano*, stands undisputed in its relation to the physical, moral, and intellectual condition of mankind.

ESSAY XIV

THE DRINK QUESTION AND TEMPERANCE EFFORTS

THE old saying, "As drunk as a lord," serves historically as a token of the *quondam* reputation of the upper classes as to intemperance; and it is not altogether wanting in significance that early in the eighteenth century (1723) a book was published under the title of "*Ebrietatis Encomium*, or the Praise of Drunkenness," the author contending, with apparent seriousness, for the advantages of occasional intoxication. Although circumstances had combined to diminish the evil, towards the end of the eighteenth century and the opening of the nineteenth, the three evils of swearing, gambling, and deep drinking were very prevalent, and what was common was not considered shameful. The Prince of Wales was not an example of sobriety or self-restraint, and statesmen such as Sheridan, Pitt, and Dundas were notoriously addicted to the bottle. Sheridan, facetious even in the gutter, is said to have given the name of Wilberforce as his own when questioned by a constable who found him drunk in the street; and of Pitt and Dundas the well-worn story is often told, that when entering the House of Commons together, the one exclaimed, "I see no Speaker;" to which the other replied, "That's strange, for I see two!" The treaty of Methuen was said to have increased the intemperance of the upper classes by substituting the use of port wine for that of claret.

The drinking habits of "the quality" were reflected in those of inferior position. Then, as now, the maintenance of religious institutions chiefly devolved upon the middle classes, but where religious control was absent drinking customs and carouses were frequent. Even a profession of religion and great ability and learning, as in the case of Professor Porson, were known to be associated with habitual intemperance. Among the few who at that time protested by precept and example against the vice of the period was Dr. Erasmus Darwin (grandfather of Charles Darwin), who is said to have induced a number of squires of his acquaintance to adopt his own practice of abstinence from *all*

intoxicating drinks. Dr. Beddoes of Bristol, and Dr. Trotter, who had been Physician to the Fleet, also wrote against the use of alcoholic drinks; and Basil Montague published in 1814 his "Essay on Fermented Liquors, by a Water-Drinker."

The condition of the working classes as to drinking was generally low. Cowper, in his "Task," wrote:—

> "Pass where we may through city or through town,
> Village or hamlet, of this happy land,
> Though lean and beggared, every twentieth pace
> Conducts the unguarded nose to such a whiff
> Of stale debauch, forth issuing from the styes
> That law has licensed, as makes temperance reel."

William Playfair, the political economist, in his "Inquiry into the Permanent Causes of the Decline and Fall of Powerful and Wealthy Nations," said: "Surely it would be well to take some mode to prevent the facility with which people get drunk, and the temptation that is held out to do so." Successive Select Committees of the House of Commons made clear the extent and corroding nature of the evil, and the Select Committee on Drunkenness obtained in 1834 by Mr. J. S. Buckingham, M.P., secured a mass of evidence covering the preceding thirty or forty years. The licensing laws were consolidated in 1828, but under the delusive idea that separating the sale of beer from that of spirits would effect a great reform, the Beer Act of 1830 was passed, under which, in a few years, upwards of 30,000 beer-shops were opened, and a new tide of drunkenness was added to the old.

The heavy potations after dinner and the social drunkenness so common among the upper classes in the early years of this century have unquestionably fallen into disrepute and desuetude; yet aristocratic examples of intemperance are not unknown, and the power of strong drink to excite a craving for itself is illustrated in the scions of not a few noble families. A change of fashion has, fortunately, effected a great improvement in upper class social habits, and to the influence of the Court for the last fifty-nine years much of this amendment must be ascribed.

Both the middle and working classes have been subject to the great educational and elevating forces of the present century, and have been especially affected by the temperance reformation. Drinking trade usages, once general, and often compulsory, have largely disappeared, and the substitution of tea and coffee for wine and spirits in social circles is becoming daily more common. Yet the enormous annual expenditure upon strong drink, the number and dimension of drinking-shops, and the vast social suffering having its source in the love

of drink, witness to the terrible magnitude of the old evil, and to the difficulty of emancipating the great body of the people from its grasp. Members of the British Medical Association who, a few years ago, reported upon about four thousand male patients who had died, supplied returns showing that only two in five could be described as perfectly temperate, and this fact indicates the pernicious extent of drinking habits in our own day, despite the number and the activity of the countervailing causes.

The temperance movement in Great Britain and Ireland originally took the form of pledged association against the use of ardent spirits. The first societies in Ireland and Scotland were established in 1829, and in England in 1830, many persons of rank and social position becoming adherents. In 1832, at Preston, in Lancashire, Joseph Livesey and others advocated abstinence from *all* intoxicating drinks. Preston was the chief centre of this new propaganda, and in the course of a few years the old anti-spirit societies throughout the country either dissolved or resolved themselves into total abstinence associations. This change, while it added greatly to the number of members, led to the secession of many influential persons, who were not prepared to relinquish the use of wine and other fermented liquors. All temperance societies are now on a total abstinence foundation, and although the Church of England Temperance Society has a dual basis, this is not intended for the sanction of moderate drinking, but in order that those who are not total abstainers may co-operate with them for the reduction of the causes of intemperance subsisting in legislative and social arrangements. The United Kingdom Alliance does not require its members to be abstainers, but its platform and literature have powerfully aided the general temperance movement.

No national temperance census has yet been undertaken, and statements concerning the number of total abstainers in the United Kingdom must be of a conjectural character. In arriving at even an approximate estimate, the entire population must be divided into several sections.

First, there are some millions of infants and very young children who seldom, if ever, take any intoxicating drink, because it is not given to them.

Secondly, there are the very many millions (composing the bulk of the adolescent and adult community) who, more or less frequently and more or less freely, use intoxicating liquors.

Thirdly, there are those, who may be reckoned at some millions, who take intoxicating liquors seldom and sparingly, and may be described as habitual, but not total, abstainers.

Fourthly, there are those who totally abstain, on principle, from all alcoholic beverages. Their numerical proportion to the other three classes is not ascertained; but, considering (1) that the members of Bands of Hope and other juvenile societies have been carefully estimated at between two and three millions; (2) that there are some thousands of adult societies, lodges, tents, &c.; (3) that there are several thousand abstaining clergymen of the Church of England, and that a large majority of Nonconformist ministers are total abstainers, and influence their congregations in the same direction; (4) that all the members of the Salvation Army are total abstainers, —it seems not improbable that the number of persons who, deliberately and conscientiously, abstain from intoxicating drinks as beverages may be set down as between four and five millions. Some estimates have been as high as seven millions, but it is probable that in this number there have been included those who were classed above as habitual but not total abstainers.

Turning to drink legislation in England and Wales, we find that previous to 1839 public-houses and beer-shops might remain open at all times except during the hours of Divine Service on Sunday. But in the August of 1839 all drink-shops in the Metropolitan area were closed up to 1 P.M. on Sunday; and in 1848 a similar regulation was applied to all drink-shops in England and Wales. Subsequently the hours of sale on Sunday and weekdays were reduced; and in 1884 Wales, at its own request, came under a law closing public-houses on Sunday except to *bonâ fide* travellers.

Mr. Gladstone's Revenue Acts, 1860–2, led to the sale of beer and wine in refreshment-houses outside the control of the Justices, and to the sale of wine and spirits in quart bottles for consumption off the premises, under Excise licenses, commonly called grocers' licenses; but in 1869 an Act was passed giving Justices control over refreshment-house licenses, and also over all beer-shop licenses taken out after May 1869.

In 1872 a General Licensing Act was passed embodying most of the previous restrictions, and making changes tending to further restriction.

In 1882 an Act was passed putting all off-beer licenses (of whatever date) under the control of the Justices.

The Truck Act forbade all payment of wages by means of drink.

The sale of all intoxicating liquors has been forbidden to young persons under sixteen years of age, but children are still allowed to buy and carry drink away.

The great case of Sharp *v.* Wakefield declared the law to be, as affecting public-houses, that there is no vested interest

in a license, and that the holder of a past license stands precisely on the same legal footing as a new applicant.

In Scotland, by the Forbes Mackenzie Act, 1853, the sale of liquor on Sunday was made illegal, except in hotels to *bonâ fide* travellers. Other restrictions were included. Subsequent Amendment Acts have increased these restrictions; and under a recent Act the Justices can make the hour of closing in burghs 10 instead of 11 P.M.

In 1878 a Sunday Closing Act for Ireland was passed, but exempting five cities, in which, however, the Sunday hours of sale were restricted. The leaders of both political parties have expressed themselves in favour of a Bill for rendering the Sunday closing permanent, for confining the sale on Sunday in the five cities to two hours for consumption off the premises, and for closing all public-houses at 9 P.M. on Saturday night.

There are no legal provisions limiting the number of licenses that may be held by one person either directly or indirectly; and as a matter of fact, private brewers and brewery companies hold hundreds of houses, the licenses for which are in the names of persons entirely under their control. The Justices could put an end to this state of things by the exercise of the absolute discretion with which they are entrusted. Soon after the House of Lords' judgment in Sharp *v.* Wakefield some Benches avowed their intention of dealing effectually with the "tied-house" system, by requiring every licensee to produce the deeds of the house of which he was presumably the real tenant or owner. In very few cases has this resolution been carried out. So far as the public are concerned, one great evil of the multiple or tied-house system consists in the facility with which the real owner is able to get the license of a convicted licensee transferred to another nominee, who is nothing more than a manager, though in the eye of the law he is the *bonâ fide* tenant of the house to which the license is granted.

From 1840 to 1860 temperance societies, on the principle of abstinence from ardent spirits, were very numerous in Germany, and the membership at one time exceeded a million, but political agitations and wars brought about their dissolution. There are, however, two Good Templar Grand Lodges in Germany, and other signs of a temperance revival. In France, Belgium, and Switzerland the increase of drinking-shops and augmented consumption of intoxicating liquors have caused great alarm among medical men and persons engaged in philanthropic work; but in Switzerland the Society of the Blue Cross, on the total abstinence principle, and some Good Templar Lodges have exerted a salutary influence. In Russia a large portion of the peasantry are sodden with *vodka*, and the

Government has always displayed a greater anxiety to maintain the spirit revenue than to encourage efforts for the sobriety of the people. About sixty years ago Sweden and Norway were notorious for the consumption of distilled spirits, and twenty years later Dr. Huss of Stockholm published a remarkable work on the diseases produced or aggravated by alcoholism. But by the laws forbidding the private manufacture of spirits and the enacting of Local Option, and by the establishment of temperance societies, Good Templar Lodges, &c., a highly beneficial change has occurred in both countries. According to some temperance reformers, this change has been very slightly, if at all, due to the Gothenburg and Bergen systems, under which private companies purchase and control spirit-shops in the larger towns.

Concerning the United States it is difficult to generalise. As we shall show presently, there is more drunkenness in some of the large cities than in such of ours as have a bad repute. At the same time, the people of the more advanced States are comparatively sober, and a stranger may travel for months in the country without seeing a drunken man. On the other hand, in certain of the recently colonised States and in some of the large cities drunkenness is rife.

In India drunkenness is on the increase owing to the facilities offered, with Government sanction, to the natives to procure intoxicating beverages. From this it must not be inferred that the authorities encourage drunkenness for revenue purposes, but there is laxity in granting licenses to distil spirits, which are drunk in place of lighter native beverages. Great efforts are being made by Mr. Caine (late M.P.) and a large band of temperance reformers throughout India to counteract this evil, and a journal called *Abkari* is published by the Association.

It is impossible to close this essay without an expression of regret that, notwithstanding all temperance efforts and temperance legislation, drink is the source of crime and poverty, in a greater or lesser degree, throughout a great portion of the civilised world, and that where civilisation is introduced into barbarous regions drink is too frequently a concomitant. In Africa this has been the case to such an extent that recently a native prince, Khama, accompanied by other chiefs, came over to this country to solicit national aid to prevent the wholesale introduction of spirits into his country and the debauching of his people.* Germany, although itself comparatively a

* Their remonstrances, so far as their country is concerned, have been fairly met by Mr. Chamberlain, our Colonial Secretary; but, as Mr. Horace Waller writes: "For generations the West Coast native has been accustomed to see the ocean

sober country, is equally a sinner with ourselves, sending into Africa fiery spirits of the worst description. We protest against the retention of slavery on the part of the Portuguese in some of their colonies, whilst by the importation and sale of spirits in ours we destroy both body and soul.

A hopeful sign for the future is the fact that with education and enlightenment drunkenness diminishes. A comparison of the statistics of education with those of drunkenness proves this, as does the fact that the habit of excessive drinking is sinking lower and lower, from the upper and middle classes to skilled workmen, and from those to unskilled labourers and vagrants. Without burdening the subject with too many figures, we append a few statistics as some evidence of the accuracy of the preceding statements, and others will be found in the essays on Crime and Punishment and on Education. Finally, there are one or two considerations to be kept in view in regard to the future. In some cases the poverty is so extreme that indulgence in drink is next to impossible; in others poverty is as much the cause of drunkenness as that is the cause of poverty; and therefore it is but fair to conclude that with improving material conditions, as with extending intelligence, the drunken habits of the people will eventually cease to exist. But when? Drink and war are the curses of the world!

Some Statistics of Drunkenness in Large Cities in U.S.A. and England.

Name of City.	Population.	Slum Population.	Saloons in City per Inhabitant.	Saloons in Slums per Person.	Arrests for Disorderly Conduct and Intoxication.
Baltimore . .	(1890) 486,206	25,000	1 to 229	1 to 129	17,146
Chicago . .	(1890) 1,217 353	162,000	1 to 212	1 to 127	71,802
New York .	(1890) 1,567,431	360,000	...	...	48,542
Liverpool * .	(1891) 577,984	...	(1891) 1 to 257	...	(1891) 11,348
London . .	(1891)† 4,194,413	...	(1893) 1 to 307	...	(1893) 32,737

cast up the powder-keg, the rum-cask, and the demijohn. For hundreds of miles in the interior the square-shouldered bottles are as well known as the beads and brass-wire which are the usual currency, and along their path sorrow flows." [Quite true. The only people who have tried, in the face of this mercenary liquor traffic, to Christianise without debauching the negroes are the "Bremen Mission," Vietor und Söhne. They will have their reward.—ED.]

* In the year 1889 the arrests for drunkenness in Liverpool were 16,042. They fell steadily until 1894, when they were 5657. Of these, rather more than half were men, the rest women. Of the men, only 168 did not belong to the working classes; of the women, 1941 were either of "no trade" or avowed prostitutes.

† This is exclusive of the city, which was about 37,700.

ESSAY XV

CRIME AND PUNISHMENT

It may seem incredible to some of our readers that at the beginning of this century two feudal customs still existed in connection with the punishment of crime in this country which are usually associated with our ideas of the dark ages—"trial by battle" and "benefit of clergy." "Trial by battle" dates back as far as the time of the barbarians, having been established, it is believed, by the Alemanni or the Suabians.* It gradually fell into disuse all over Europe, but the last appeal of wager in battle took place in this country, in the present century, in the case of *Ashford* v. *Thornton*, where Thornton was strongly suspected of murdering Mary Ashford. He was acquitted at Warwick Assizes, but an appeal was brought by her brother, 2nd November 1818, when the appellant read his count (indictment) in the Court of King's Bench, charging Thornton with his sister's murder. Thornton then pleaded, "Not guilty, and I am ready to defend the same with my body;" and threw down his glove. His right was maintained, but the appellant was not prepared to do battle, so Thornton was arraigned on the appeal, to which he pleaded his previous acquittal. This led to the abolition of all such appeals in criminal cases.† "Benefit of clergy" is a phase of criminal jurisprudence of later date, the first Parliament of Edward I. having formally enacted what had previously existed in an imperfect way, namely, the custom that an offender liable to death should only be burnt in the hand if he could read. It was intended for the exemption of ecclesiastics from trial by a secular judge, and they were handed over to the Church to be tried by the bishops. This exemption was afterwards extended to all educated persons, who, if they could

* Hallam, "Middle Ages," vol. i. p. 242, note *u*.

† 59 Geo. IV. c. 46. The present state of the law allows appeals in cases of felony and indictable misdemeanours on points of law only, if the judge consents to reserve the point of law for the consideration of the Court for Crown Cases Reserved. On matters of fact the decision of the justices or jury is final, though the convicted person may petition the Home Secretary to review the case.

read a verse of Scripture, were acquitted by the lay tribunals. "Benefit of clergy" was frequently modified, and many felonies became excluded from its operation, but it was only actually abolished in the year 1827. These two instances are cited to show the barbarous state of our criminal law at the beginning of the century, and about the period just named (1827) prosecutions were conducted in this country as they continue to be in France at the present day. The magistrates in criminal procedure acted as public prosecutors, and questioned the accused fully and exhaustively.* He (the accused) was not allowed to be present at the examination of witnesses, the taking of whose depositions was intended solely for the information of the Court; in short, the prisoner was assumed to be guilty, instead of the question of his guilt or innocence being left open. By the Prisoners' Counsel Act (1836) persons under trial acquired the right to inspect all depositions made against them, and in 1849 they became further entitled to receive a copy of the depositions.

The so-called "trading justices" continued to exist in the early part of the century. They lived upon their fees, and the mode of levying such fees has been described by Townshend, a "Bow Street runner," who entered the service of the police in the latter part of the last century. "At that time," he said, "before the Police Bill took effect, it was a trading business, and there was Justice this and Justice that. Justice Welch in Litchfield Street was a great man in those days, and old Justice Hyde, &c. The plan used to be to issue out warrants, and take up all the poor devils in the street; and then there was the bailing of them—2s. 4d.—which the magistrates had; and taking up 100 girls, that would make, at 2s. 4d., £11, 13s. 4d. They sent none to jail—the bailing of them was so much better."† This scandal became so crying that it led to the establishment of seven public police offices in London and one in Surrey, to each of which three justices were attached, and paid by salaries of £400 a year, the Court taking the fees. This was the origin of the present Stipendiary Magistrates.

For a long period the death penalty was attached to almost every kind of felony; and even in 1827 the Act for consolidating and amending the laws relating to larceny re-enacted the punishment of death for robbery either by force or by threats; for false accusation of infamous crimes; for sacrilege, burglary, housebreaking, and stealing, or putting in fear

* Later on, especially after Sir John Jervis's Act (1848), they occupied the position of preliminary judges.

† Report of the Committee on the State of the Police of the Metropolis, 1816, pp. 139, 140.

any person in the house; stealing to the value of £5 in a dwelling-house, and stealing horses, sheep, and other cattle. Other Acts retained it for arson and certain other crimes, including attempts to murder, rape, forging public documents; but it was found, as time progressed, that the retention of capital punishment for such a variety of offences led to a gradually increasing reluctance on the part of juries to convict.*

To conclude these observations on crime and punishment at the commencement of the present century, it may be stated that in 1834 an Act was passed abolishing the practice of hanging the bodies of criminals in chains after execution; and in 1837 transportation was substituted for punishment by death in cases of burglary, highway robbery, arson, and forgery, the last person who was hanged for forgery having been (if the writer's memory is correct) a gentleman called Fauntleroy, who elected to meet his doom in full evening-dress!

So far, it may be said, the chief aim of justice was retribution; but although there are still grave defects in its administration, and notably in the places and methods of punishment, a totally different spirit now prevails with those whose duty it is to prevent and punish crime. That spirit was aptly expressed in the words of the Minister of Justice at a recent Prison Congress in Paris:—

"Justice," said M. Trarieux, "such as we now conceive it to be, is no longer what it was deemed in ancient times, implacable punishment, blind vengeance. The justice which we strive after is that which observes all the moral principles to which conscience is obedient; it is the justice which sympathises with the weak, and which pities childhood; it is the justice which has 'bowels of mercy,' and which not only knows how to reclaim, but also how to reform the transgressor by a combination of clemency with strictness. Yes, it is justice to which we aspire, the *sursum corda* which rises from our Congress."

* As showing the result of this reluctance to inflict the death penalty, in the diminished number of sentences and executions, we would refer the reader to Porter's "Progress of the Nation," p. 642, where he will find a table of the number of committals, &c., from 1805 to 1845. From that table we extract the records of a few years:—

Year.	Total Committed.	Number Convicted.	Sentenced to Death.	Executed.	Executed for Murder.
1805	4,605	2,783	350	68	10
1817	13,932	9,056	1,302	115	25
1831	19,647	13,830	1,601	52	12
1834	22,451	15,995	480	34	12
1845	24,303	17,402	49	12	12

Thus it will be seen that in the last-cited year the only executions which actually took place were for murder.

But now let us inquire whether and how those noble principles are carried into practice amongst civilised nations; and, to begin with our own country, what kind of discipline do we find in our convict prisons, and what means are employed for reformation? Michael Davitt, who would probably have been considered a "political refugee" if he had been a foreigner seeking an asylum in this country, has given us his experiences of penal servitude. These are his words:—

"Unnatural silence, semi-starvation, and animal-like submission is the plan of reclaiming erring men from crime. . . . As a system of mere punishment, it tramples upon every instinct and inclination of human nature, and penalises every faculty by which man is distinguished from a tiger or a dog. To speak, sing, whistle, or walk; to attempt to ornament the cell; to offer to or take from a neighbour an ounce of bread; to exchange a book; to possess a needle or pin; to stitch a button to a garment without permission; to look out of the cell window into the prison-yard; to protest against bad or light-weight food; to refuse to strip naked whenever the warder requires for the purpose of searching—all this, with a hundred other nameless, irritating, ceaseless, mind-killing worries and degradations, is what separate cellular life and work mean to a prisoner undergoing 'reformation' on the Du Cane plan."*

And this description of our prison system, from what some may consider a convict's point of view, is more than confirmed by the systematic inquiries and evidence of a Departmental Committee, composed of men whose impartiality is beyond question.† "Prisoners," they tell us, "have been treated too much as a hopeless or worthless element of the community. . . . Prison life, subject to the sentences now given, loses its terrors, and familiarity with it increases." The degree of suffering is not measurable by the punishment actually inflicted, for "the hardened criminal bears the discipline without much trouble; others are brutalised by it; others suffer acutely, and perhaps are permanently weakened by it in mind and body. What is a temporary inconvenience to the grown criminal may be to lads and younger men a bitter disgrace from which they never recover to their dying day. . . . Old and young, good and bad, men convicted of atrocious crimes, and those convicted of non-criminal offences, are all to be found in the same prison."

The perusal of the foregoing, and much more to the same effect, will one day cause the historian to doubt whether this is the free and enlightened country we boast it to be. That the members of the Committee of inquiry were deeply impressed with the facts which were brought before them there can be no doubt. They recommend the abolition of the crank and

* The *Nineteenth Century*.

† Report of Departmental Committee on Prisons, 1895.

treadwheel, which are practically instruments of torture far worse than some that are in vogue amongst half-civilised peoples; also the abrogation of the rules of dark cells in convict prisons, and the substitution of workshop labour for oakum-picking and similar occupations.* Even stone-breaking is disapproved of (and here let it be remarked parenthetically, that this is the work which tender-hearted Poor-Law Guardians offer to the respectable "unemployed," and they wonder that the stone-yard is unpopular and deserted!); and, indeed, there is hardly a feature in our prisons or prison system which it is not proposed by the Committee of inquiry to reform or abolish. One of their suggestions is, that the officials of the Prisoners' Aid Societies, who are the real benefactors of criminals, should have access to them before leaving their place of confinement, and prevent them from returning to their old haunts. But reforms in this as in every other social or political sphere in this country are sure to be slow. Vested interests and the existing state of things are always obstacles to statutory changes. "Further," the Prisons Committee tells us, "the prisons are not located or constructed, neither is the staff trained or paid for industrial purposes."

In the United States it is otherwise. Notwithstanding the opposition of the free working classes, industrial occupations in prison have to a great extent superseded cruel and non-productive penal employment. A flourishing account is given of the system in the prison at Elmira (New York), which was opened in 1876 for youthful male felons. Their ages range from sixteen to thirty years, and at the close of 1893 there were 1378 inmates in the "reformatory." The loss upon the establishment was about £32,350 during that year, after deducting from the cost of maintenance about £10,000 "trade earnings." The plan of the reformatory is to place the prisoners as much as possible in the conditions of free life, and thirty-four different trades are taught and practised. It is claimed that "78 per cent. of the discharged inmates" go straight to the trades they have learned in the prison; that that percentage "of the discharged inmates return to society not more, but probably less likely to fall than the virtuous class to which they belong."

We hope this picture is not overdrawn, and perhaps an account of the experience of the writer during a visit paid by

* Since these lines were written the Prisons Board have decided, in accordance with the recommendations of the Committee, to provide work that will interest prisoners, and be useful to them when they are released. The kinds of labour chosen are such as may be utilised by the Government, the War and Admiralty Departments; and efforts will be made to abolish the crank. As stated, however, the progress of the reforms is likely to be slow.

him in the year 1880 to the State Prison at Concord, near Boston, may be of interest. Under the guidance of the Governor (who held his hand upon a revolver in his pocket) he visited the workshops where the prisoners were engaged making saddles, felt hats, &c. At one end of each workshop sat a supervisor at a raised desk with a revolver upon it. At the least sign of insurrection or insubordination the prisoner was to be shot. "Our paw," said the Governor, "is of velvet, but it covers sharp claws." Men who were condemned to long sentences of penal servitude for second offences, especially assaults upon the warders, were caged in large cells, without egress even for exercise during their whole term. A boy who had been sentenced to death for enticing children and murdering them, but whose sentence was commuted to imprisonment, was clinging to the bars of his cell with glaring eyes—he was evidently a maniac, or becoming one. In case of fire the warders were instructed that "under no circumstances" must prisoners be allowed to escape: "revolvers" again. In the prison at Pentonville (which the writer visited shortly afterwards) the instructions were that the first duty of the warders during a fire was to look after the safety of the prisoners. Velvet paws and sharp claws seemed to be the rule on the other side of the Atlantic.*

As a matter of fact, overlooking the difficulties of dealing with inherited crime, or crime the result of vicious or criminal surroundings, there are human beings whose nature is so debased that they rank with the *ferœ*, and it is almost impossible to treat them as rational creatures. Still, as a rule, reformation should be and is becoming the end of criminal jurisprudence. In Switzerland this aim seems to be successfully pursued. Penal labour consists of sawing and chopping wood, straw-plaiting, sorting of produce; this is disciplinary. Reformatory or industrial labour is of many kinds: weaving, bootmaking, clothes manufacture, carpentry, varnishing, upholstery, cooperage, brushmaking, locksmiths' and blacksmiths' work, bookbinding, paper-ruling, lithography, clock-making, basket-making, knitting, &c. Short-sentence prisoners make mats, envelopes, and paper bags. In the United States the prisoners are hired out for service, or their services sold in jail, the contractor finding the materials; not so in Switzerland, where the State employs the labour and pays for materials. We can readily understand that men trained in a variety of trades easily find employment, and from private sources we have reason to believe that, on the whole, the Swiss system

* According to the Report of the United States Commissioner of Labour, 1886, out of 64,349 convicts, 45,766 were employed at work either directly for the State or on hire in different systems.

is mild and effective, and that the after-life of the discharged prisoners is not shameful nor onerous—always comparatively speaking. In Italy most of the reformatory and industrial methods seem to be in use. Concerning Russia and Turkey the Report of the Prisons Committee is ominously silent.

The writer has visited the chief prisons in the Balkan States and in India. In the former prison discipline is lax. Excepting in the salt-mines there is little work done. The prisoners idle away their time—they would gladly work if they were allowed, and a little work is done here and there, either by individuals or in small workshops. As a rule, the prisoners associate, conspire, and (in Bulgaria) sometimes escape to the mountains and become brigands—"take to the road" it would have been called in the days of Dick Turpin.

In France all the prisoners work in the metropolitan prisons, and an honest effort is being made to carry out the theory of the Minister of Justice, whose words we have quoted; but there is still much to be desired, for it is often found difficult to reconcile the needs of the prison with the interests of free labour. The wages to be paid to prisoners are fixed at the suggestion of Chambers of Commerce, regard being had to the standard wages of legitimate workers, with whom there is as little competition as possible. The same remarks apply to Germany, Austria, and every country where industrial occupations on a large scale have become part of the prison system.

In India there are some model prisons, notably those at Baroda and Agra. In 1888, when the writer visited the one at Bombay, he found it simply what the Germans call a *Kerker*, a place of incarceration; there was no attempt, not even the desire, to reform the inmates—a strange contrast to the one at Baroda, a native State. This was a model prison, consisting of radiating sheds in which the prisoners follow industrial occupations. It is airy and cheerful, and stands in large grounds, where the prisoners work at gardening, &c. Those working indoors weave carpets, quilts, counterpanes, &c. Many of the carpets are very beautiful, some of the best being ordered by English dealers, and sold in first-class shops in London. The prisoners, when at work, sat on the floor, with their legs in long wells or channels, and they seemed happy and contented. In Agra the prison is conducted on a similar principle, but is of much larger dimensions. In Bombay there is an excellent industrial reformatory, called after the benefactor who founded it, Sassoon, where industrial work is carried on by committed boys; and this leads us to say a few words more concerning our own reformatories. It has been shown that, whilst the number of children in industrial schools has increased enormously, those in reformatories have

gradually diminished since 1881,* and it is satisfactory to know that with fewer offenders has been coupled improved treatment, for we are told by the inspector of these institutions that during the last twenty years education has improved, the buildings are much better, and corporal punishment (the use of the birch) much reduced. The schools have marched with the times, and are doing honestly good work under, with scarcely an exception, energetic and able management.†

To trace the various causes of crime in such an essay as this would be impossible, but some are too obvious to escape notice. Poverty has something to do with it, but not so much as is generally supposed. Ignorance is an important factor, and improved education is accompanied by a well-defined decrease in the criminal record. The average school attendance in Great Britain rose uninterruptedly from 1,783,740 children in 1873 to 5,346,556 in 1893; whilst, with almost equal regularity, the criminal convictions for indictable offences fell from 13,199 in the former year to 11,700 in 1893. Drunkenness, it need hardly be said, plays an important part in the history of crime, but in that connection the statistics are hardly so favourable. From a table which has been kindly furnished to the writer by the Home Office, it appears that between 1870 and 1873 the number of persons convicted of drunkenness in England and Wales increased from 109,356 to 164,553; and that, having reached 170,948 in 1890, it fell off to 147,984 in 1893. On the whole, however, it is safe to say that improved education acts favourably also for sobriety. Crowding into large cities is a potent factor. New York has increased in population 142.9 per cent. during the last thirty years; Glasgow, 73.9 per cent.; Berlin, 222.8 per cent.; Vienna, 164.5 per cent., and so on; and the density of the population naturally increases more rapidly in poorer districts than in the outskirts of cities, where there is room for expansion, so that the causes which make for crime are more concentrated and contagious. With extended education, however; with greater sobriety, better housing and sanitation, improved police supervision, and general progress in the intellectual and recreative pursuits of the masses, and especially through the removal of the young from criminal associations, we may look forward with hope and confidence to a steady diminution of crime; and where it exists, as it must long continue to do, the aim of punishment will be less vindictive and retributive, and will become more and more deterrent and reformatory.

* "On the Condition of Children."

† Report of Lieutenant-Colonel W. Inglis, Inspector of Reformatory and Industrial Schools (Thirty-eighth Annual Report, 1895).

ESSAY XVI

WAR AND INTERNATIONAL ARBITRATION.

To the thoughtful student of modern questions there is no phenomenon so disheartening as the settled conviction which seems to prevail that war is an unavoidable evil. The nations that rank first in the march of progress employ a goodly portion of the highest talent at their disposal, make enormous drains upon their material resources, and in most cases remove the male population from industry for several years to give them a special training—and all this in preparation for mutual destruction. Each fresh device in the mechanism of slaughter remains but a short time in the hands of the nation that buys it of the discoverer, and no great Power dare face the risk of allowing its armaments to become obsolete. If Messrs. Yarrow build for the Russian Government a torpedo-catcher (the *Sokol*) with a speed of thirty-four miles an hour, then forty miles becomes the aim of the British Admiralty. At each alarm of war some Government, thinking its security menaced, enlarges its expenditure, and its rivals must follow its example. The race between France and Germany to outnumber each other's armies will at once occur to the reader, and a most striking instance was recently presented in the British naval budget of 1896, following on the war scare of the preceding winter, and the instant resolution of the United States to increase the number of their war-ships. The state of things which the armed peace of the last twenty-five years has brought about will be painfully evident from the tables appended to this work, which show amongst other data the military and naval preparedness for war of the leading nations of the world.*

The war contagion spreads, unfortunately, to the smallest, poorest, and most inoffensive nations. In 1895 the Tyneside shipbuilders were gladdened with orders from Chili and San Domingo, while Switzerland and Belgium must arm for fear their territories should be made a cock-pit for unscrupulous

* Appendix No. III.

combatants. The placid millions of the East, as we have been wont to regard them, show signs of a fatal activity, and within no long space Japan must rank among the chief war Powers of the world.

The mere existence of these complicated and expensive armaments is a source of danger. The temptation is very great to make use of some new discovery to win a war before other nations get hold of it. Again, the pursuit of war tends to become attractive, apart from the ends to which it is directed, as soon as it rises to the rank of a profession. Ambitious officers in India and Russian Asia have been responsible, it must be feared, for more than a few aggressive border wars, and the highest honours are still conferred upon warriors.

To the moralist, it must be admitted, the aspect of war is uniformly repellent; but philosophers, especially those whose creed it is that all is for the best in this our excellent world, have thought to find in it redeeming features. Thus, Hegel was of opinion that "war is not an absolute evil, and that perpetual peace would be a state of moral stagnation for the nations." Herbert Spencer is more reserved. In his letter to the arbitration meeting at St. James's Hall, London, on March 3, 1896, he says:—

"Savage as have been the passions commonly causing war, and great as have been its horrors, it has throughout the past achieved certain immense benefits. From it has resulted the predominance and spread of the most powerful races. . . . At the same time, military discipline has habituated wild men to the bearing of restraints, and has initiated that system of graduated subordination under which all social life is carried on. But though, along with detestation of the cruelties and bloodshed and brutalisation accompanying war, we must recognise these great incidental benefits bequeathed by it heretofore, we are shown that henceforth there can arise no such good to be set against its enormous evils. Powerful types of men now possess the world; great aggregates of them have been consolidated; societies have been organised; and throughout the future the conflicts of nations, entailing on larger scales than ever before death, devastation, and misery, can yield to posterity no compensating advantages. Henceforth social progress is to be achieved, not by systems of education, not by the preaching of this and that religion, not by insistence on a humane Creed daily repeated and daily disregarded, but only by cessation from those antagonisms which keep alive the brutal elements of human nature, and by persistence in a peaceful life, which gives full play to the sympathies. In sundry places and in sundry ways I have sought to show that advance to the higher forms of man and society essentially depends on the decline of militarism and the growth of industrialism."

To criticise the views of the greatest of living philosophers

may seem presumptuous, yet one cannot help asking whether the "powerful types of men" have yet settled among themselves the proprietorship of the head-waters of the Nile, for instance, and whether in this direction there may not be room for the action of war.

It would be rash to prophesy that no case could ever occur again as that of the French Revolution, whose propaganda were established by force all over Europe, and with results generally acknowledged to have been beneficial.*

And yet, whatever be the answer to this and similar questions, no individual can or dare arrogate to himself the right of applying so fierce a cautery to the ills society is heir to. As Hegel has said, it is incumbent on seekers after progress to strive for peace in any case.

The miseries attendant on an appeal to arms between civilised communities have from the earliest times suggested the remedy of arbitration. Thus in ancient Greece the Amphictyonic Council judged between the component States of Hellas; in the Middle Ages the spiritual arm of the Roman Church often interposed to secure the peace of Europe; in modern history an almost continuous chain of arbitrations might be cited. In the present century peace was preserved in Europe, with slight infractions, from the Congress of Vienna in 1815 till the revolutions of 1848, by a council of the signatories of the Treaty of Vienna, who not only managed to avoid hostilities within their own circle, but to check outbreaks on the part of the smaller Powers. Thus, for instance, Turkey was forced to keep hands off Greece by the single engagement of Navarino.

Again, in 1836 England pronounced on the disputes between France and the United States arising out of the interpretation of the Treaty of Paris of 1830; in 1847 France, Austria, and Prussia interposed to settle the quarrels between the Catholic cantons of Switzerland and the Federal Government. The most important date, however, in the history of international arbitration in this century is 1872, when decisions were given on two disputes between this country and the United States, in both cases in favour of the latter: the San-Juan boundary question and the Alabama case.

* Without at all differing from the writer of this essay concerning the evils and criminality of war, it would be worse than indiscreet not to remember the great interests which to-day, in this country, need protection from unscrupulous and ambitious rulers. From the Appendix already referred to it will be seen that the total sea-borne commerce of the United Kingdom (that is to say, the imports and exports, without estimating the value of shipping or the Colonial trade) during the year 1895 amounted to more than 682 millions sterling, and to ensure the safety of this vast property from plunder we expended on the maintenance of our navy a little over 17 millions, or less than 2½ per cent. of the value.—ED.

The first depended on the interpretation to be put on the Treaty of Washington in 1846, the first clause of which marked out the boundary between the north-west territory of the States and that of British Columbia. The three arbitrators named by the Emperor of Germany—namely, Kiepert, a geographer; Goldschmidt, a jurist; and Grimm, a diplomat—gave their decision on October 21, 1872. This check to Great Britain at Berlin followed hard upon another at Geneva, where compensation to the extent of fifteen and a half million dollars was awarded to the United States for damage inflicted on the commerce of the North by the Southern cruiser *Alabama*, which had been fitted out in England. The litigant parties had previously entered into an agreement (the Washington Convention, May 8, 1871), in which it was laid down that it was the duty of a neutral State—

(1.) To use due diligence to prevent the fitting out, arming, or equipping within its jurisdiction of any vessel which it has reasonable ground to believe is intended to cruise or to carry on war against a Power with which it is at peace; and also to use like diligence to prevent the departure from its jurisdiction of any vessel intended to cruise or carry on war as above, such vessel having been specially adapted, in whole or in part, within such jurisdiction, to warlike use.

(2.) Not to permit or suffer either belligerent to make use of its ports or waters as the base of naval operations against the other, or for the purpose of the renewal or augmentation of military supplies or arms, or the recruitment of men.

(3.) To exercise diligence in its own ports and waters, and, as to all persons within its jurisdiction, to prevent any violation of the foregoing obligations and duties.

With these rules before it, the tribunal was directed to determine, as to each vessel, "whether Great Britain has, by any act or omission, failed to fulfil any of the duties set forth in such rules, or recognised by the principles of international law not inconsistent with such rules."

The arbitrators were—Sir Alexander Cockburn, Lord Chief-Justice of England, nominated by the Queen; Charles Francis Adams, nominated by the United States; Count F. Sclopis, nominated by the King of Italy; M. Jacques Staempfli, nominated by the Swiss President; M. A. d'Aurojo, Viscount d'Itajubá, Brazilian Envoy to France, nominated by the Emperor of Brazil; and the following was their award:—

"Whereas, with respect to the vessel called the *Alabama*, it clearly results from all the facts relative to the construction of the ship, at first designated the Number 290 in the port of Liverpool, and its equipment and armament in the vicinity of Terceira through the agency of the vessels

called the *Agrippina* and the *Bahama*, despatched from Great Britain to that end; that the British Government failed to use due diligence in the performance of its neutral obligations; and especially that it omitted, notwithstanding the warnings and official representations made by the diplomatic agents of the United States during the construction of the said Number 290, to take in due time any effective measures of prevention, and that those orders which it did give at last for the detention of the vessel were issued so late that their execution was not practicable;

"And whereas, after the escape of that vessel, the measures taken for its pursuit and arrest were so imperfect as to lead to no result, and therefore cannot be considered sufficient to release Great Britain from the responsibility already incurred;

"And whereas, in despite of the violations of the neutrality of Great Britain committed by the '290,' this same vessel, later known as the Confederate cruiser *Alabama*, was on several occasions freely admitted into the ports of colonies of Great Britain;

"And whereas, the Government of her Britannic Majesty cannot justify itself for a failure in due diligence on the plea of the insufficiency of the legal means of action which it possessed:

"Four of the arbitrators for the reasons above assigned, and the fifth for reasons separately assigned by him, are of opinion—

"That Great Britain has in this case failed by omission to fulfil the duties prescribed in the first and the third of the rules established by the 6th article of the Treaty of Washington."

This decision derives its great importance, first from the extent and weight of the interests at stake between two such powerful countries, and from the positions laid down as to the duties of neutrals. It further established the principle that claims for indirect losses were inadmissible before a tribunal of arbitration, in rejecting the American claim for losses sustained by them owing to the exploits of the *Alabama* having prolonged a costly war.

On September 25, 1872, the President of the French Republic (M. Thiers) was called in to arbitrate on the respective claims of England and Portugal to Delagoa Bay and the adjacent territories. On July 24, 1875, his successor (Marshal MacMahon) adjudged the disputed territory to Portugal.

In 1873 the American and Italian representatives in Brazil decided on the claims for damages put forward by the British Government on behalf of Lord Dundonald, and awarded £38,675.

In May of the same year the Czar of Russia pronounced on a dispute between Japan and Peru arising out of a shipload of coolies landed at Kanagawa, and decided in favour of Japan.

In 1874 the United States and Mexico submitted certain claims made by the former against the latter to the arbitration of Sir E. Thornton, who upheld the claims. In this case the

Mexican Government, having discovered alleged fraud and subornation of witnesses, attempted to reopen the question before the same arbitrator, but he denied his competence to re-hear it.

In the same year, a dispute having arisen between France and Nicaragua concerning a seizure of arms on board a French vessel at Corinto, the Nicaraguan Government paid its adversary a high compliment, and formed a new precedent in arbitration, by suggesting that the case be decided by the Cour de Cassation at Paris. The Court accepted the task, but insisted on a preliminary compromise between the litigants, wherein the object of the arbitration and the extent of the powers delegated by them should be fixed (1879). Judgment was delivered in July 29, 1880, against Nicaragua.

In 1875 the British Minister at Pekin was appointed to settle a dispute between China and Japan arising out of the murder of a Japanese subject in Formosa, and he condemned the former country to pay an indemnity.

In 1880 a mixed Commission was appointed to examine into various disputes between France and the United States of America arising out of the War of Secession, the Franco-German war, the Commune, and the French expedition to Mexico. The two countries appointed a commissioner each, and agreed to accept one nominated by the Emperor of Brazil.

In 1880, also, the Emperor of Austria arbitrated between Great Britain and Nicaragua, a dispute having arisen with reference to the Treaty of Managua of 1860.

In 1882 (2nd November) an arbitration treaty was signed at Santiago between France and Chili, referring claims made on the latter country by French subjects for losses incurred during the war between Chili, Peru, and Bolivia to three commissioners, two to be nominated by the respective litigants, and one by the Emperor of Brazil.

In the same year the President of the French Republic was chosen to arbitrate between the Netherlands and San Domingo, with reference to the ship *Havana Packer*, confiscated by the latter Government for illegal importation of arms, and condemned San Domingo to pay a heavy indemnity.

These cases, however, fall far short in interest of the celebrated affair of the Carolines between Germany and Spain in 1885, when a German corvette hoisted the German flag on the island of Yap, and aroused such indignation that at Madrid the German representative was threatened, and the German flag torn down and trampled upon. War seemed imminent; but, at the suggestion of Prince Bismarck, the dispute was referred to Pope Leo XIII., thus reviving to the Holy See the position of arbiter that distinguished it in the Middle Ages.

His decision was in the main unfavourable to the German view, though reserving certain trade privileges to that nation in the disputed islands.

The next two years were only marked by unimportant cases of arbitration, chiefly with reference to delimitation of frontiers in South America; but 1888 was distinguished by several instances of a graver kind. A dispute in Samoa between England and Germany was referred to Baron Lambermont, of the Belgian Foreign Office, and settled in 1889 in favour of the former. In the same year the Emperor of Russia was invited to decide the boundaries between the French and Dutch possessions in Guiana, but his final award was only given in 1891.

In 1888, also, Denmark and the United States appointed Sir Edmund Monson, the British Minister at Athens, to adjudge on a dispute concerning two American vessels which were said to have been detained illegally, and afterwards fired upon, by the authorities of the Danish possession St. Thomas. His decision was against the States. In this year also a treaty was concluded between France and Holland, providing for arbitration in certain eventualities; at the same time the Chambre des Députés accepted a report in which the principle was expounded.

A quarrel, that had its origin in 1871, between the United States and Venezuela was at length referred to arbitration in 1890. This may be regarded as one of the fruits of the Pan-American Congress, held that year at Washington. In this same year Samoa, ever a fruitful source of discord, became the subject of an arbitration treaty between Great Britain, Germany, and the United States. It was provided that, the signatory Powers failing to agree upon an arbitrator, the King of Sweden should make the selection.

In the following year (1891) the principle of arbitration was applied in a most important dispute, that between France and Great Britain as to the cod-fishery in Newfoundland; but, unfortunately, the necessary parliamentary sanction has not at present (1896) been given to the provisions of the treaty. The arbitrators named in the treaty are: M. de Martens, Professor of Law at the University of St. Petersburg; M. Rivier, Swiss Consul-General at Brussels; and M. Gram, formerly a member of the Norwegian Supreme Court.

In the same year (1891) the arbiters in the Anglo-Portuguese dispute about Delagoa Bay met at Brunnen, in Switzerland. The Peace Societies contributed to this result by a note which they collectively addressed to all the nations of Europe.* In

* The award has not yet been made, owing to delay, it is said, in translation of documents.

another part of Africa, on the Zambesi, a conflict occurred between the British and Portuguese; and Lord Salisbury, by threatening to withdraw our Ambassador from Lisbon, compelled the Portuguese to retire from the disputed territory, thinking the aggression too plain to make arbitration possible. By a convention concluded in June 1891, various points were left to be settled by a tribunal of arbitrators.

Next to the Geneva Award, probably the Behring Sea Arbitration has most deeply stirred the feelings of the English race. The United States Government had set up a claim to exclusive rights over the seals in Behring Sea, and in virtue thereof assigned sole privileges to an American company, and seized by force a number of British and Canadian sealing-ships. The most celebrated seizure was that of the *W. P. Sayward* in 1887. By the end of 1889 the British claims preferred against the United States for seizures of this kind amounted to $500,000, irrespective of the personal claims of the crews. Representations were, of course, made by the British Government, but so little progress was made with the negotiations that in 1890 the British Ambassador at Washington, being unable to obtain any assurance that the seizures would be discontinued pending negotiations, gave notice that the American Government would be held responsible for any conflicts that might ensue, while at the same time offering to submit the question to arbitration. The offer was accepted in November 1891.

In the Behring Sea Arbitration the arbitrators were as follows:—For the U.S.A.: Hon. J. M. Harlan, Justice of the Supreme Court of the U.S.; Hon. John T. Morgan, Senator of the U.S. Great Britain: Sir John Thompson, Minister of Justice and Attorney-General for Canada; Lord Hannen. France: Baron de Courcel, Ambassador of France. Italy: Marquis E. Visconti Venosta, Senator of the Kingdom of Italy. Sweden and Norway: Mr. Gregers Gram, Minister of State.

By the Treaty of Washington the arbitrators were required to decide on five points, which, with the respective awards, are here appended:—

I. What exclusive jurisdiction in the sea now known as the Behring Sea, and what exclusive rights in the seal-fisheries therein, did Russia assert and exercise prior and up to the cession of Alaska to the United States?

Award (Senator Morgan dissenting).—By the Ukase of 1821 Russia claimed jurisdiction in the sea now known as the Behring Sea to the extent of 100 Italian miles from the coasts and islands belonging to her; but in the course of the negotiations which led to the conclusion of the treaties of 1824 with

the United States, and of 1825 with Great Britain, Russia admitted that her jurisdiction in the said sea should be restricted to the reach of cannon-shot from shore, and it appears that from that time up to the time of the cession of Alaska to the United States, Russia never asserted in fact or exercised any exclusive jurisdiction in Behring Sea, or any exclusive rights in the seal-fisheries therein beyond the ordinary limit of territorial waters.

II. How far were these claims of jurisdiction as to the seal-fisheries recognised and conceded by Great Britain?

Award (Senator Morgan dissenting).—Great Britain did not recognise or concede any claim upon the part of Russia to exclusive jurisdiction as to the seal-fisheries in Behring Sea, outside of ordinary territorial waters.

III. Was the body of water now known as the Behring Sea included in the phrase "Pacific Ocean," as used in the treaty of 1825 between Great Britain and Russia; and what rights, if any, in the Behring Sea were held and exclusively exercised by Russia after said treaty?

Award.—1. (Unanimous.) Behring Sea *was* included in "Pacific Ocean." 2. (Senator Morgan dissenting.) No such rights were held exercised.

IV. Did not all the rights of Russia as to jurisdiction and as to the seal-fisheries in Behring Sea east of the water boundary, in the treaty between the United States and Russia of the 30th March 1867, pass unimpaired to the United States under that treaty?

Award.—In the affirmative (unanimously).

V. Has the United States any right, and if so, what right of protection or property in the fur-seals frequenting the islands of the United States in Behring Sea, when such seals are found outside the ordinary three-mile limit?

Award (Justice Harlan and Senator Morgan dissenting).—The United States has no such right.*

The award also comprised a number of regulations for enforcing a close time for seals and their absolute immunity from pursuit within sixty miles of the Pribylor Islands. Difficulties have since occurred as to the payment of indemnities to British sealers, the American Senate having refused the necessary credit on the ground that a fresh treaty was necessary. It has been confidently asserted in the newspapers that such a treaty is approaching ratification.

* It is interesting to note that in nearly all the awards all the arbitrators were unanimous in their decisions excepting one of the representatives of the United States, the other, and probably the more important of the two, siding in every case with the majority.

We have little doubt that many of our readers will have been surprised to find how frequently recourse has already been had to abitration in disputes almost any one of which might formerly have led to long and sanguinary wars, and that must be our excuse for having dwelt at such length upon their details. Other arbitrations of less moment have been held since the one last described, as, for example, that between Great Britain and Chili for the settlement of claims arising out of the Chilian civil war of 1891, and two or three in which Spain, Italy, and certain South American Republics were interested; and it would seem as if the question of international arbitration, at any rate as between this country and the United States, is likely to undergo remarkable developments in the course of the present year (1896), owing to the Venezuela dispute. This case is one illustrating the greatest stumbling-block in the way of all pacific settlements of quarrels. No nation, even a Christian one, will ever be bound by the simple recommendation of the Founder of Christianity, to turn the cheek to the smiter. All are possessed by that motive which forms so potent a factor in the private lives of civilised men, that of personal honour, and after a certain amount of insolence, or what is taken to be such, has been displayed on either side, an appeal to arms becomes inevitable. In Anglo-American disputes, luckily, an additional factor comes into play, the feeling of blood-relationship, which, on the side of this country at any rate, produces an inclination to indulgence. So strong has been the aversion felt to a war between peoples so closely akin, that from this very dispute a movement has sprung for establishing a permanent tribunal of arbitration to settle all disputes between England and America. President Cleveland writes to encourage the promoters of the scheme, but the sting of his letter lies in its tail—he reminds them that arbitration can only apply to matters not affecting the national honour. No one supposes, for instance, that arbitration on the Venezuela dispute would be allowed to touch the validity of the Monroe doctrine.

Again, the application of the principle becomes impossible when warlike operations have been once begun. This is well put by a writer in the *Times* (22nd January 1890): "We might with just as much reason overrun Pondicherry, and then call for arbitration to decide whether it ought to belong to France or ourselves. . . . That mode of settling differences [*i.e.*, arbitration] is prescribed by the Act of the Berlin Conference as a preventive of warlike operations. It is not intended as a refuge for a Power which first makes war and then attempts to escape the consequences of its own temerity." The views of

eminent statesmen all appear to contain some such saving clause; *e.g.*, Mr. A. J. Balfour's letter to the St. James' Hall meeting of March 3, 1896, already alluded to: "There are no doubt questions which a nation could not permit to be finally settled by any tribunal. This is an argument not against arbitration, but the rash and unconsidered use of it."

Marquis Rudini, then Italian Premier, writing in March 1891 to the International Arbitration and Peace Association, said: "The humanitarian aim pursued by your Association is held by us in the highest esteem, and I cannot refrain from praising the elevated and lofty ideals which inspire the communication [concerning disarmament and arbitration]. . . . Italy was the first to introduce the arbitral clause into her non-political treaties, and it is our custom to propose it whenever an opportunity for doing so arises. But if the Government of the King is disposed to remain faithful to arbitration, I still cannot—for reasons of delicacy which this Association will certainly appreciate at their true value—in the capacity of Minister in charge of Foreign Affairs, bind myself to any formal engagement to support the cause always, and under all circumstances, however noble I feel it to be," &c.

Signor Crispi writes (1890): "The aim of the Conference is most praiseworthy, although to positive minds it may appear difficult of attainment."

The views of Lord Salisbury will be found at length in the part of this paper that deals with the parliamentary discussion of the subject.

Sir Charles Dilke, again, does not take a very cheerful view: "Personally he had some doubts as to the applicability of the principles of arbitration to all questions between great Powers. As to its value between great Powers and small ones there could be no doubt; but as regarded great Powers, there was considerable danger that our own unpopularity . . . would dispose against us those to whom questions might be referred." He went on to allude to the presence as arbitrator in the Costa Rica and Newfoundland cases of a gentleman "closely connected with the Russian Foreign Office." This fear of partiality was very prevalent in this country after the *Alabama* decision, but the Behring Sea case has done a good deal to dispel the idea. Unfortunately it seems as if the disappointment of the States at this last decision were responsible for much of the ill-humour recently displayed by them.

There is one consoling feature in the history of the question, that only on two occasions have parties to an award—the United States in 1831 and Venezuela in 1894—failed to carry the award into effect.

The organisation of societies to secure a peaceful settlement of international disputes may be said to date from the conclusion of the Napoleonic wars, when the Quaker, William Allen, founded the Peace Society, which is still in active operation. Among other similar bodies now existing may be mentioned the International Arbitration League (founded in 1872 as the "Workmen's Peace Association"), presided over by Mr. W. R. Cremer, M.P.; the International Arbitration and Peace Association for Great Britain and Ireland, in which Mr. Appleton has taken an active part; the Christian Union for the Promotion of International Concord, &c. In the United States are the American Peace Society, the Universal Peace Union, and some forty minor bodies. In France are the Société Française de l'Arbitrage Entre Nations, founded under a different name by M. Frédéric Passy in 1872, and the Ligue Internationale de la Paix et de la Liberté, founded at Geneva in 1867. In Holland the cause of peace is served by the Algemeen Nederlandsch Vredesbond (founded 1870). The chief society in Belgium is the Section Belge of the International Arbitration and Peace Association. The proceedings of the Peace Congress at Rome in 1891 enumerate seventy-nine Italian Peace Societies, of which the best known is the Associazione per l'Arbitrato e la Pace tra le Nazioni. Nearly all the countries of Europe are represented at these Congresses, the notable exception being Russia. Austria boasts a Society under the presidency of Baroness von Sattner, founded in 1892. The title of her celebrated novel, "Die Waffen Nieder," is also that of the Society's magazine. The same year saw the foundation of a Peace Society at Berlin, consisting wholly of members of the German Reichstag, under the presidency of Dr. K. Baumbach, Vice-President of that body. Rapid progress has since been made in this the most military nation of Europe, which now contains fifteen Peace Societies, the chief being at Berlin, Frankfort, and Baden.

Closely connected in spirit with these associations are the attempts made by various legislative bodies to further the cause of arbitration. In 1849 Richard Cobden brought forward a resolution in the House of Commons binding the Government to conclude arbitration treaties in all cases where difficulties could not be solved by diplomatic methods. Lord Palmerston opposed it, while, on the other hand, approving of the principle of *mediation*, and it was defeated by 176 votes to 97. In 1873 Henry Richard invited the Government to take steps for a permanent and universal system of arbitration, but Mr. Gladstone thought the project premature. The resolution was, however, passed. In 1887 (25th July) the Marquis of

Bristol proposed in the House of Lords the establishment of an international court of justice. The speech of Lord Salisbury in reply will serve, perhaps, to give the view of the average cautious man :—

"I confess—and I think it is the general feeling—that, deeply as everybody sympathises with the object my noble friend has in view, and earnestly as we must desire to see the day when the horrors of war may be prevented by the establishment of some species of international arbitration, it is very far from us now, and farther apparently than it was some years ago. No one, I think, can watch the progress of affairs on the continent of Europe, and the tendency of various States, without seeing that the pacific spirit has not increased, and that the chances of avoiding war are not more favourable than they were. My Lords, the reason why any proposal of this kind has not yet been dealt with as a practical proposition is, that it presupposes in States a condition of mind which would in itself accomplish all the objects my noble friend has in view. If nations were once to get to that state of mind that they would submit all their disputes to any tribunal, and would obey that tribunal, the warlike spirit would so far disappear that the very necessity for taking precautions would cease to exist. At present we can only say that we see no prospect of the formation of any such tribunal. I will not be tempted by my noble friend (Lord Stanley of Alderley) to discuss the capacity of the Papal See to fill such a position, but there is no probability of the formation of any tribunal under which all nations would confidently feel that they would have equal law. There is no Legislature to lay down the law by which such a tribunal could be guided, and there is no authority to enforce its decrees when once they have been pronounced, and therefore it would be a mere form, and its functions would be reduced to a nullity. My noble friend proposes to avoid these practical objections by leaving to nations, after they had submitted themselves to a tribunal, the choice, if they thought fit, of going to war if they did not like the decision. The only effect of that provision would be to interpose a period of time between the origin of the dispute and the declaration of war, which would give an opportunity to the Power least prepared to bring itself to a level with the Power most prepared. It is very unlikely that any Power which felt itself to be the best prepared would submit to an artificial disadvantage such as that. The chief effort of all nations now with regard to their warlike machinery is not merely to make it as potent as it can be made, but also to bring it to such a state of perfection that it can be set in operation at the earliest possible time. I fear, therefore, that the proposal of my noble friend is contrary to the tendency of all modern nations, and is not likely to meet with acceptance at their hands. I think, my Lords, we are misled in this matter by the facility with which we use the phrase 'international law.' International law has not any existence in the sense in which the term 'law' is usually understood. It depends generally upon the prejudices of the writers of text-books. It can be enforced by no tribunal, and therefore to apply to it the term 'law' is to some extent misleading, and, I think, has given rise to the somewhat exaggerated hope with which those persons who hold the views of my noble friend approach the matter. I do not think there would be any advantage in committing this House to a barren statement on the subject. I do not believe that one man in a hundred supposes that such

an issue as my noble friend desires, intensely desirable as it is, will be witnessed by ourselves, by our children, or by our grandchildren, and it is idle to attempt to conceal from our minds the terrible realities of the case. I therefore can meet the motion of my noble friend in no other way than by recommending him to withdraw it."

This was done; but further reference will hereafter be made to Lord Salisbury's views.

The English Parliament has not, however, been alone to move in this matter. In 1880 Signor Ruffiero Borghi in the Italian Chamber of Deputies, and Signor di Sostegno in the Senate, obtained a unanimous vote in favour of the "supreme civilising agent" (arbitration). Signor Crispi unexpectedly rose to support the resolution, and expressed an opinion that "some day the voice of reason would prevail, and arbitration be accepted by all nations." Similar propositions have been brought forward in Holland and Belgium (1780, 1874), Spain (1890), Sweden (1874, 1890), and Belgium (1875).

Though of an unofficial nature, the attempt of 1887 may be mentioned, when 234 members of the House of Commons and 36 of the House of Lords signed a memorial to the President of the United States of America, inviting him to submit the question to Congress. The President sent the memorial to the Senate and to the House of Representatives, which bodies, on 4th April 1890, came to a concurrent resolution, "that the President be, and is hereby, requested to invite from time to time, as fit occasions may arise, negotiations with any Government with which the United States has or may have diplomatic relations, to the end that any differences or disputes arising between the two Governments, which cannot be adjusted by diplomatic agency, may be referred to arbitration, and peacefully adjusted by such means."

The date of June 1889 is one of importance in the arbitration movement, since on that day there met at Paris, under the presidency of M. Jules Simon, an inter-parliamentary conference, consisting of ninety-nine members from the Legislative Assemblies of England, France, Italy, Spain, Belgium, Denmark, Hungary, Greece, and the United States. It is curious and not reassuring to note, that though international jealousies were not apparent, nevertheless in the second of these conferences (1890) the mention of Alsace caused a scene, and at the third (1891) a distinct Right and Left were evolved, representing the Latin and Teutonic nations respectively.

During the present year the agitation in favour of international arbitration has set in afresh. The impetuous utterances of the President of the United States have enabled those exponents of the good sense of the nation who have hitherto lacked the opportunity to make their views heard and felt, and

the clamour of those who professed to favour a war with this country (it is believed by many on both sides of the Atlantic, merely as an electioneering cry) has been silenced. It would appear as though the first real and effective movement towards the establishment of international courts of arbitration will be made on the other side of the Atlantic, where there is no large standing army waiting to be exercised. With the newest of great nations is coupled the voice of one of the most ancient. The Pope, whose moral and religious influence extends over a great portion of the civilised world, has declared unmistakably for the establishment of such courts. In this country the leading journal of the democracy, the *Daily Chronicle*, is at present the warmest and most persistent supporter of the movement, and it is to the democracy in all countries, whose blood is shed in every dispute submitted to the arbitrament of war, that the advocates of peace and arbitration will have to look for help. The arguments and predictions of Lord Salisbury in regard to the continuance of the present system would have applied equally to arbitration in commercial matters, where self-interest is the most potent and often the sole consideration. It would apply still more forcibly to Boards of Conciliation in labour disputes, where no legal power, no power, indeed, except public opinion, can compel submission to an award; and if Lord Salisbury's views are to be held as correct, both his and all preceding Governments have been wasting their time in attempting to legislate on industrial disputes.

It is an unquestionable fact, and some of the preceding data will have helped to establish that fact, that to bring about a supercession of war by international courts of arbitration in the present state of society will be a very difficult task. But however we like to regard the matter, the establishment of such courts cannot fail to be an advantage. There is no such thing as international law, says Lord Salisbury. All the more reason for submitting disputes to international courts of equity. To postpone an appeal to arms, he says, will enable the weaker Power to level itself up to the stronger. Lord Salisbury is sufficient of a diplomat to know that there are other means than international arbitration to attain that end. "Russia wants peace," said Madame de Novikoff in one of our leading journals; "*she is not ready.*" To enter into the schemes, the motives, the passions which tend to perpetuate war and give employment to warriors would be impossible here; but to say that these motives and passions will continue as long as man peoples this earth would be tantamount to saying that mankind will never be civilised. Who will venture to uphold such a doctrine?

PART III

EDUCATIONAL

ESSAY XVII

EDUCATION

THERE is probably no subject in respect of which, at the present time, civilised nations differ from one another so widely as in the arrangements they make for education. This is perhaps scarcely to be wondered at, when it is borne in mind that nearly all the other matters in which they differ—religion, government, climate, economic conditions, &c.—have a direct influence upon these arrangements. A sparsely populated country has different needs in this regard from one more densely peopled; an agricultural country from one largely engaged in commercial or industrial pursuits; while even amongst the latter the requirements of one locality may differ very widely from those of another. A self-governing people will not tolerate institutions which are admirably calculated to produce good results amongst one more docile to the action of authority. In a nation homogeneous in religion, a system may not only be consistent with justice, but may be in the highest degree expedient, which would be intolerable in one that, like France, is deeply fissured by religious differences; and, again, the regulations natural in the latter instance may be highly unacceptable in another country, where, as in England, differences in religion are much more numerous but less deeply rooted. A new country engaged in extending its dominion over nature has needs which differ widely from those of a more settled community and a more complex civilisation.

These considerations, however, which may appear to us to be almost commonplaces, are comparative novelties in the history of the nations—the outcome almost entirely of the

last two centuries, and mainly of the past seventy years. In the Middle Ages universally, and in most of the countries of Europe until after the French Revolution, education was almost entirely in the hands of the religious Orders. During the feudal period there was not much difference either in the social or economic condition or in the density of population between what are now the different countries of Europe; nor had the population itself since the irruption of the Teutonic races and their admixture with each other, and in larger or smaller proportions in different provinces with the subject peoples, crystallised itself into distinct nations. Provincial feeling was fairly strong, but national feeling may almost be said to have been non-existent; and the allegiance of different provinces to any particular sovereign was due to a great variety of personal and other considerations into which national sentiment entered very little. The whole European system was unified, to an extent which it is now difficult to realise, by traditions of its former oneness under the Roman dominion, by a vague reverence for the emperor, on whom, notwithstanding the practical repudiation of his sway by the greater part of his former dominions, a certain portion of the old majesty continued to rest, and by the pervading influence of a cosmopolitan religious organisation. Thus, where now there is the utmost diversity in educational matters, there was formerly an equally remarkable uniformity. What education existed was everywhere actuated by the same motives, pervaded by the same spirit, and conducted by the same methods. Everywhere alike the main object of education was the training of suitable instruments for the service of the Church and of the State. It was considered that the necessary capacity was by no means a universal possession, that it was confined to no class, and that its cultivation, wherever it existed, was a highly meritorious service alike to God and to the State. Moreover, each religious Order felt that not a little of its own influence depended on the extent to which it should secure, for its own service, a supply of this not very widely diffused quality. Accordingly, as every village schoolmaster in Scotland might for many generations past have been looked upon as an accredited agent for securing suitable material for his own *Alma Mater*, so each member of a religious Order, in parochial or other charge, performed a somewhat similar function for the body to which he belonged. But certainly no one then contemplated, probably very few would have considered desirable, a time when everybody would be educated, whatever might be his native capacity or the station in life for which he was destined.

The very conception of an educated nation may be said to be the creation of the Reformation; and even in the minds of the Reformers themselves it was scarcely more than the germ of that which at present obtains almost universally. Its motive was exclusively religious—that the Scriptures, on which they relied for their success, might be in the hands of the people in the vulgar tongue, and that the knowledge of the ancient languages from which those Scriptures had been translated might be widely accessible. The idea that education of any other description could ever become either an economic or a political necessity was one for whose conception a further couple of centuries were needed.

The period of the English revolution witnessed a remarkable quickening of educational zeal both in England and in Scotland. In the former country the last years of the seventeenth century saw the foundation of the now venerable "Society for Promoting Christian Knowledge," which was instrumental within a few years in securing the establishment of no less than one thousand schools, specially designed to bring at least elementary education within the reach of the poorest. In Scotland the same years witnessed a complete examination of its educational system from the universities downwards, and the placing definitely on the shoulders of the heritors or landowners of each parish the duty not only of paying the parish schoolmaster, but also of providing a suitable school building—a duty which, in case of default, the Presbytery were empowered to perform at the cost of the defaulters.

On the continent of Europe the early years of the eighteenth century brought with them the foundation of the Prussian monarchy, followed not long after by the beginning of a system of education which, by the year 1763, had developed into the first professedly compulsory system established in Europe. About the same time the question of popular education began to be seriously agitated in France, but without much practical effect. In the first enthusiasm of the Revolution a complete scheme of national education was drawn up, to extend, in one connected whole, from the communal school to the universities and the Academy itself. This scheme, however, like so many others framed at this period, remained little more than a scheme; it gave some little impetus to the development of secondary and higher education, but left primary practically untouched. Under the Empire and the Restoration this state of things continued; and it is stated that the budget of public instruction reached only 4250 francs (£170) under Napoleon, and only 50,000 francs (£2000) under the Bourbon Restoration.

Meanwhile, in the first years of the present century, through the labours of Lancaster and Bell respectively, the British and Foreign School Society and the National Society had been founded—the latter reviving and considerably extending the school-work previously carried on under the auspices of the Society for Promoting Christian Knowledge. The number of schools was considerably increased, the monitorial system was introduced, and steps were taken for the systematic training of teachers. Concurrently the primary schools of Prussia, which had fallen into grievous decay—probably through the troubles following the Revolution in France—were revived, and an enormous change in educational thought and methods in that country brought about by the labours and teaching of Pestalozzi.

In France the Revolution of 1830, in England the Reform Act of 1832, were instrumental in giving a new impetus to education, which has gone on, not only without any fresh slackening, but with ever-accelerating pace, until the present time. The Monarchy of July made, in 1833, the first attempt to give effect in some small measure to the scheme drawn up at the time of the Revolution. It organised a system for recruiting and training teachers, it gave some encouragement to primary education, and it introduced that system of higher primary instruction which is now one of the distinguishing features of the French school system—the budget for education rising to 3,000,000 francs. The Second Republic and the Second Empire each did a good deal to improve and extend the system; but it was reserved for the Third Republic, as it is with some excusable pride pointed out, within seven years of the national catastrophe of 1870, to carry the system to completion.

The same year (1833) which saw the commencement of real effort in France witnessed in this country the first public step in the same direction by a grant of £20,000 for the encouragement of elementary education. This modest sum is the germ from which in time has sprung the enormous system now covering this country, to its remotest corners, with a complete network of elementary schools—to be perfected, it would seem probable, within the near future, by an equally complete system of secondary and higher education.

The example of these countries, and more particularly that of Prussia, has been followed successively by nearly every State in Europe. Saxony has a system dating from 1835, Norway from 1848, Italy from 1859, and Austria from 1869. Holland, Sweden, Belgium, and other countries have taken similar steps more recently.

It is, of course, impossible within the limits of an essay of this kind even to glance at the various systems of these numerous countries, or to deal exhaustively with any. But it may be practicable to give such a sketch of the arrangements obtaining in some of the leading States as may illustrate the principal systems actually in operation.

America.

In view of the fact that the United States consist of some forty-nine separate states or territories, differing very widely among themselves alike in climate, in origin, in population, and in industrial circumstances; each one of which states or territories has almost complete control of education within its own borders, it would almost be as great a solecism to speak of the educational system of the United States as of the educational system of Europe. Yet community of language and similarity of political institutions, combined with some slight control exercised by Congress at the time of the admission of each new state, have brought about some approximation to a common system. In all states alike there is a central or state board of education, with distinct boards of education for each county and city, and district school boards for rural areas and for urban districts of less than 8000 inhabitants. In all the states education below that of the universities, and in many of the newer states the latter also, is free, and in most cases the schools are purely secular, while in the few instances in which anything in the nature of religious instruction is given in the schools it is absolutely confined to reading passages of Scripture without note or comment. In all the states education in its various grades—common school, grammar school, and high school, as well as university—is provided by the public authorities, and is in part supported by income derived from lands dedicated to that purpose by the state. Another feature common to all states and to almost all grades of education is the co-education of the sexes. Boys and girls are taught in the same rooms and in the same subjects in the primary and generally in the grammar and high schools; young men and young women pursue in common the higher studies in no less than 310 out of some 450 institutions claiming university or collegiate rank.

The main features of this system, except in regard to the absence of religious instruction, date from the very foundation of the New England states, which may justly claim the honour of having been the first among all civilised communities to bring

education to the door of every citizen, and to affirm and enforce the duty of its acceptance.

Within six years from its foundation the colony of Massachusetts, through its General Court, took steps for the foundation of a college, which some two years later (January 1639) received its present name of Harvard. Three years subsequently, in 1642, the Court passed its first ordinance with respect to general education, by which it charged the "chosen men" of each town, under penalties, with the duty and the power "to take account from time to time of all parents and masters and of their children, concerning their calling and employment of their children, especially of their ability to read and understand the principles of religion and the capital laws of this country, and to impose fines upon such as shall refuse to render such accounts to them when they shall be required; and they shall have power, with consent of any court or the magistrate, to put forth apprentices the children of such as they shall [find] not to be able and fit to employ and bring them up."

Five years after this preliminary ordinance, in 1647, when the colony had been in existence barely seventeen years, a further ordinance was passed, which laid down the lines upon which practically all subsequent development has taken place. The ordinance, from which we give the following extracts, is dated 11th November 1647, and is interesting both on account of its brevity and the quaintness of its language.

"It being one of the chief projects of that old deluder Satan to keep men from the knowledge of the Scriptures, as in former days by keeping them in an unknown tongue, so in these latter times by persuading from the use of tongues, that so at least the true sense and meaning of the original might be clouded by false glosses of saint-seeming deceivers, that learning may not be buried in the grave of our fathers in the Church and commonwealth, the Lord assisting our endeavours:—

"*It is therefore ordered,* That every township in this jurisdiction, after the Lord hath increased them to the number of fifty householders, shall then forthwith appoint one within their town to teach all such children as shall resort to him to write and read, whose wages shall be paid either by the parents or masters of such children, or by the inhabitants in general, by way of supply, as the major part of those that order the prudentials of the town shall appoint."

Corresponding ordinances, in almost identical terms—including the reference to the policy of the "old deluder"—were adopted in other New England states, and formed the basis of a system of educational legislation conceived in a strongly religious spirit, which lasted for nearly 200 years,

until, in the second quarter of the present century, that complete revolution in popular opinion took place by which religion was definitely excluded from the public schools. This remarkable revulsion of feeling extended itself rapidly over the greater part of the Union. Its effects have been embodied in the fundamental constitutions of nearly all the states created during the past half-century, in an absolute prohibition of any part of the public funds being appropriated for the support or assistance of "any sectarian or denominational school," and of any "sectarian or denominational doctrine" being taught, or instruction thereon permitted, in any public school. Similar provisions have also been adopted by many of the older states by a revision of their constitutions.

Almost coincidently with this change a great quickening took place in public interest in education; and the same decade which saw the commencement of national systems in France and England witnessed likewise, in the revival and recasting of that which previously obtained, the practical foundation of the present system in America.

By the constitution of the United States, education is one of the matters reserved entirely for the competence of the Legislatures of the separate states. But almost from the commencement of the national existence, Congress has shown its interest in the subject in a very practical manner. The whole of the territory not forming part of the original thirteen states has from time to time, as necessity required, been parcelled out into "townships" six miles square, and each of these again subdivided into thirty-six "lots." Of these lots, one was given "for the use of schools." Since 1848 another lot has also been given for the like purposes; and still more recently it has been provided that 5 per cent. upon the price realised on the sale by the United States Government of any public land within a state, after its admission to the Union, shall be added to the capital of the Common School Fund of the state in question. In addition, on the creation of each "public land" state, two whole townships have been given to the state "for the use and support of a university."

The feature of American education which perhaps most strongly strikes an Englishman accustomed to the educational systems of Europe is the almost complete independence of the district School Boards and City Boards of Education. The authority of the State Board of Education, and still more that of the central Bureau of Education at Washington, is to a great extent merely consultative and advisory. The Bureau is one vast storehouse of information with regard to the state of education in every part of the world. It is open freely and at

all times, with infinite patience and courtesy, to teachers and other persons interested in education from any part of the Union—a privilege which is readily and hospitably extended to similar visitors from foreign countries. The Bureau likewise keeps up a vast correspondence with members of state Legislatures and others at a distance who desire information on any educational matter. The annual report of the United States Commissioner on Education is rather a compendium of the information gathered during the year as to the world's work of education than a report in the English sense of the word. The progress in this matter of every civilised nation is passed more or less briefly in review for the benefit of all American citizens interested in the subject. But while it thus, by its advice and information, bears no small share in moulding the opinion of a continent, the Bureau does not directly control the action of a single school district. Each is at liberty, if it likes, to disregard the accumulated stores of experience at its disposal, and is left very much to itself to bear the results of its own folly. Even in such an important matter as the training of teachers and the testing of their qualifications there is no common system—each district is left to follow its own devices. In the great centres of population this work is well done, but by each district for itself alone. A teacher carefully trained and fully recognised in one great city may be entirely without acknowledgment in any other.

The natural result of this absence of system is, that in country places the teacher is often a person of the most meagre qualifications for the work. But in the great towns the American teacher is very frequently, both in personal attainments and professional ideals, decidedly in advance of his, or rather her (for they are very preponderantly female) English equivalent. In the periodical meetings of teachers for social intercourse and mutual encouragement, which form such a conspicuous feature of American educational life, there is not only no trace of trade-unionism, but an entire absence of any sordid spirit of self-aggrandisement such as is, in this country, not infrequently to be deplored in connection with gatherings of elementary school teachers. The proceedings consist of the reading and discussion of papers upon professional subjects—sometimes of a rather theoretical character—followed by social gatherings and occasional excursions; but probably the most valuable results are derived from the opportunities such gatherings afford for the private interchange of ideas, and for spreading the personal influence of the more able and enthusiastic members.

Much of the high tone and disinterested enthusiasm of

American teachers is no doubt due to the fact that there are no such social or class distinctions within the profession itself as in this country keep apart, to their mutual disadvantage, say, the university professor and the elementary teacher. Education is one—the common school prepares for the grammar school, and this in turn for the high school; all are free and open to the humblest citizen; so that it entirely depends on a child's own ability, and his parent's willingness to forego his labour, how far any individual child, rich or poor, or, with some reservation, white or coloured, shall proceed along this line of connected schools. Some complaint is made by the universities and colleges that the system of education in the public schools does not sufficiently prepare the scholars for an academic career, and that the seminaries of higher learning are therefore dependent to a considerable extent for their supply of pupils upon private effort. It is no doubt due to this circumstance that, out of the 59,620 students who by the latest statistics were preparing for a college career, no less than 15,009 on the classical and 10,476 on the scientific side—nearly 43 per cent. of the whole number—were put down to the credit of private schools.

The American teacher is forced to rely, more largely than teachers in any other country, upon his own moral influence for success. There is no army of attendance officers to drive children into his school, and when they are there public opinion will not permit of any large resort to corporal punishment for the maintenance of discipline. It is true that attendance is to a certain extent compulsory in twenty-seven out of the forty-nine states and territories; but it is certainly not to this cause that the sometimes striking attendance secured is attributable. For example, in Connecticut a child is required to attend for three months in the year, of which six weeks must be consecutive; in the great state of Illinois "every person must send his children to school for at least sixteen weeks during the year," of which eight weeks must be consecutive; while in the young, and consequently ambitious state of California parents are required to send their children to school "at least two-thirds of the time during which schools are taught;" but this latter requirement is not perhaps quite so serious as it looks at first sight, for it is not required that schools shall be open for more than six months in the year. In Illinois, with an estimated population of 4,041,000, the average attendance at the public schools was 605,818, or almost exactly 15 per cent.; in England, according to the last published statistics, the average attendance at public elementary schools was just over 14 per cent. of the estimated population. To the latter it would, for the purpose of comparison, probably be necessary

to add some 2.5 per cent. or 3 per cent. for the attendance of scholars at schools other than public elementary; and to the former very nearly 2 per cent. for the attendance of the 81,178 children who were being educated for the most part in what we should call voluntary schools. It will thus be seen that England, with all its twenty years of compulsion, is not more than on a par, in the matter of attendance, with the state of Illinois, in which no child need attend for more than sixteen weeks in the year. On the other hand, both American educationalists and American statesmen understand that regularity of attendance is the first condition of progress, and that the admission of irregular scholars is an injustice to the regular ones, whose advancement is retarded in consequence; and any such rule as that laid down by the Education Department in England, that a scholar may not be excluded on account of irregular attendance, would be justly looked upon as removing, in respect of the great majority of the people, the most effective instrument of compulsion. Such rules as the following, which are taken from those obtaining in the city of St. Louis, are either explicitly laid down, or are implicitly acted upon in most of the large cities of the Union, viz. :—

"Any pupil who shall be absent four half-days in one month, or who is repeatedly tardy [=late], and without giving an excuse satisfactory to the teacher, may be suspended from the school by the principal.

"No pupil shall be allowed to be absent more than one day to attend any picnic party, and *only* when previous request for the same has been made to the teacher by the parent of the pupil. Any violation of this rule shall be deemed sufficient cause for suspension.

"Any pupil guilty of disobedience may be suspended."

While, however, it is not presumed, as in England, that a man will not obey the law unless constantly reminded by the visits of a compulsory officer, there is no such tenderness as in this country with a man who really does neglect his children —"1s. and costs" is not the kind of penalty considered appropriate to such an offence. Fines, of from five to twenty dollars and upwards (in some states reaching to as much as fifty), or even imprisonment without the option of a fine, are the usual penalties in the comparatively rare instances in which it is deemed necessary to take proceedings. But with the rapid growth of the great cities, and the constant influx to them of many of the least desirable elements of the population of Europe, a change for the worse has decidedly set in, and will probably require for its counteraction some departure from the policy of almost unlimited "trust in the people," which, with the native population, has proved so markedly successful.

By the last published statistics, with a total population of 66,087,900, there were 13,510,710 children on the rolls of public schools, and 8,855,717 (equal to 13.4 per cent. of the whole population) in average attendance. This gives an average of only 65.54 per cent. upon the number on the rolls, compared with a corresponding percentage of 81.3 in England. The state which stands most favourably in this matter is that of Idaho, where the percentage in question reaches 76.12, and in which, it may be remarked, the penalty for non-compliance with the law as to compulsory school attendance may amount to fifty dollars. The district of Columbia is second, with a percentage of 75.62, and Massachusetts third, with 74.23.

The total expenditure upon the common schools of America during the last year for which figures have been published reached the enormous sum of 165,022,882 dollars, or over £33,000,000. Of this sum only 8,674,945 dollars, or barely 5 per cent. of the whole, was derived from the income of public endowments; the remainder was almost entirely raised by direct taxation.

France.

In France, Republic though it be, the system of education is more centralised and less under popular control than in, probably, any other country. It is controlled in all its three branches (primary, secondary, and superior), which are otherwise distinct as regards organisation and funds, by the Minister of Public Instruction and the Fine Arts, who is assisted in the discharge of this duty by a director of each of the three branches of education, and by an advisory council consisting of sixty members, selected in part by the President of the Republic, in part by their colleagues from the Council of State and the Institute, together with representatives of the clergy, the army, navy, and others. Under this Minister the whole country is divided into seventeen main divisions, called "academies," and consisting in each case of a group of departments. In each academy education in all its branches is under the supervision of a "rector," with the assistance of a council comprising—in addition to the academy inspectors, of whom there is one for each of the included departments—a certain number of professors and representative teachers. Each department forms, for educational purposes, a subdivision of the academy, and is presided over by the prefect, who has the assistance in this respect of a council, of which he is *ex-officio* president. The academy inspector of the department is vice-president,

and the other members comprise the director of the male training college of the department, the directress of the female training college (if there is one), two male and two female teachers elected by their colleagues in the department, and one clerical and one lay representative of the private schools, in addition to four members of the council of the department. In each department there are a certain number of primary inspectors—about one to every 150 schools; these inspect the individual schools, and report thereon to the academy inspector, who in turn reports to the rector, and he to the Minister.

The ultimate units in educational as in other administration are the communes, of which there is a total of over 36,000 in the entire country. They differ very greatly in size —from the city of Paris, with its population of two and a half millions, to the tiny hamlet of perhaps twenty people. About 1000 of the more minute communes are, for educational purposes, grouped with others of larger size; but, with this exception, each commune is bound to have at least one school of its own. If the population of the commune is less than 500, this school may be a mixed one for boys and girls; but wherever the population exceeds that figure, separate schools for the two sexes are obligatory. This provision must be made quite irrespective of what private or clerical schools there may be in the district. In communes with more than 2000 inhabitants there may be, in addition, a separate school for infants. The cost of providing these schools is primarily a charge upon the commune, but in the case of the poorer districts, a large part, in some instances the whole, of this charge is met by assistance from the State to an extent which averages for the entire country rather more than £1,000,000 a year. The duty of seeing that a sufficient amount of primary school accommodation is provided devolves upon the primary inspector. The cost of the annual maintenance of these schools is borne in part by the communes and departments, in part by the State. The total number of separate schools (or departments) is about 70,000—of which some 2600 are for infants —with an enrolment of about 2,500,000 boys, 2,000,000 girls, and 500,000 infants. In addition, there are under private or clerical management some 18,000 schools (or departments)—of which nearly 3000 are for infants—with a total enrolment of about 500,000 boys, 850,000 girls, and 250,000 infants. These figures, compared with the corresponding particulars for England and Wales, bear striking testimony to the remarkable difference in density of population between the two countries. The actual enrolment in public elementary schools is almost exactly the same in both cases, viz., some 5,000,000 children;

but in this country they are distributed among little more than 30,000 departments, instead of 70,000 as in France. The total cost of the annual maintenance of the French schools is about £6,500,000, that of the English schools about £9,150,000; but it is not a little remarkable that the proportion of this expenditure which is at present borne by the State is exactly the same in both countries, viz., 65 per cent. of the total. The number of teachers employed in the French schools is close upon 150,000; in England the total number, exclusive of pupil-teachers, is under 87,000, or, inclusive of these young people, barely reaches 115,000.

As in this country, the ranks of the teaching profession for elementary schools are recruited mainly from the elementary schools themselves. After a course in the primary school up till about twelve years of age, the future teachers usually proceed to a higher primary school, where they remain until they obtain the "certificate of higher primary studies"—ordinarily at about fifteen. Then follows a course of preparation for the "lower certificate of capacity for teaching," which must be obtained before the student can enter a training college. Students may not enter the training colleges (or, as they are usually called, Normal Schools) before they are sixteen or after they are eighteen years old. The course lasts for three years, and, in addition to general and professional studies, includes a certain amount of actual practice of teaching. There is one training college for male students in each department, but there are still about twenty out of the eighty-seven departments that have no similar institution for female teachers. The cost of these colleges is defrayed out of the public funds of the department, with some little assistance in a certain number of cases from the State.

Primary education in France is gratuitous in all its stages, and is compulsory between the ages of six and thirteen, except that a child of twelve who has obtained a "compulsory certificate" need not attend school more than half-time. Four half-day absences during a month render the child's parent liable to a summons to appear before the local school commission; a repetition of the offence may be punished in addition by the defaulter's name being publicly posted for fifteen or thirty days upon the door of the town hall. For a third offence the parent is liable to prosecution before a magistrate, and may be fined up to fifteen francs, or sent to jail for five days.

The "higher primary schools," of which there are some 160 for boys and 60 for girls, attended by about 15,000 and 4500 children respectively, may be considered rather as a completion of primary than as a link with secondary schools.

In these schools fees are charged, but a certain number—about 7 per cent.—of the scholars attend with scholarships from the primary schools, which provide the holder with maintenance as well as instruction.

Secondary education is provided by two classes of schools—communal colleges and State *lycées*—provided, as their names imply, by municipalities and the State respectively. These are all supported mainly by the fees of the scholars, the charge for board and education varying from about £25 to £60 a year, and for day scholars from about £4 to £12 a year. But there are numerous scholarships (with maintenance), provided by the municipal or State authorities, as the case may be, enabling the more promising scholars from elementary schools to pursue their studies at the secondary schools, and even to proceed to the universities.

GERMANY.

In Germany, as in the United States, education is a matter within the sole competence of the individual states; and although a general similarity exists between the methods adopted throughout the empire, there is a great deal of local variety both in the details and in the efficiency of the system. In the latter respect some of the minor states compare favourably even with Prussia itself; but it is impossible to do justice to their separate merits within the limits of what must necessarily be a mere sketch. Attention will accordingly be devoted solely, and that very imperfectly, to the system as it is applied in Prussia, which is at once the largest state in the confederation, and the originator of the system itself.

Education is compulsory upon all classes between the ages of six and fifteen, and all parents who have children of the prescribed age, for whose education they have not made other arrangements, are required to present them on a given date at the elementary (or "People's) school of the district for enrolment. The children thus enrolled form one or more classes, as the case may be, the members of which in subsequent years—with exceptions, of course, in individual instances—advance together through the successive classes of the school. This simple arrangement for the simultaneous enrolment of new scholars permits of an amount of method in all school matters—including the construction of the buildings—which is unequalled elsewhere.

The arrangements for the provision of schools—at least in other than the great cities—are exceedingly complicated, being based partly upon territorial divisions, partly upon

denominational distinctions within those divisions. The rural school committees, which have the management of the schools of a particular denomination within a given district, comprise "the patron," where there is one (generally the landowner), the pastor, in some instances the Mayor, together with from two to four "heads of families" elected by their compeers. In the towns educational arrangements are under the control of special "delegations" or committees appointed by the Municipal Council, from among the burgesses, whether or not members of the Council, but presided over as of right by the senior councillor among their number.

Teachers are appointed in rural districts either by the "patron" or by the school committee; in the towns by the school delegation; but in all cases the appointment is subject to confirmation by the Government. As soon as his appointment is confirmed, the teacher, though paid by the locality, becomes a State official, is irremovable except for cause defined by law, and is entitled to a retiring pension provided by the State. All schools being denominational, the master selected must be a member of the denomination to which the school belongs, and he vacates his appointment if he afterwards changes his religious profession.

Whether a school shall be free or not is a matter to be determined by the governing body; where fees are charged the amount varies from about 4s. to 8s. a year per scholar, which is to be paid in respect of all children eligible to attend, whether in fact they do so or not. In the case of the children of indigent parents, the fees are paid either by the managers of the "Fund for the Poor" or by the municipality.

In the "People's schools" religion is a compulsory subject.

The cost of maintaining the school—so far as it is not met by the fees—is ordinarily a charge upon the locality alone, the Government rendering assistance only rarely (and then by the way of "grace"), except by the provision of teachers' pensions.

One of the most striking features of the Prussian system, in comparison with those of other nations, and especially with those of America and England, is the very small extent to which female teachers are employed. Out of some 90,000 teachers, only some 30,000 or 40,000 are female, though the proportion has been increasing considerably during recent years.

Teachers are all required to be trained at one or other of the 110 "seminaries," or Normal Schools. They enter at about seventeen years of age, and are required to go through a three years' course of training. The students are drawn

mainly from the classes attending elementary schools, but previous to admission to the seminaries they have usually received a course of instruction, in special establishments for *præparands*, or, in the case of some of the female teachers, in "higher girls' schools."

In some of the less populous rural districts "circulating teachers" are still employed, the master continually removing from one place to another, remaining in each only from one to three days, and setting the pupils tasks to be prepared by them during the intervals of his visits. Much difficulty is also occasioned in some parts by diversity of language, some 500,000 children speaking ordinarily only Polish, Lithuanian, Danish, or some other non-German language.

The children of the wealthier classes do not, as a rule, attend the "People's schools." For their preparatory instruction a separate class of schools—called *Vorschule*—has been provided, in which the education has direct reference to the "Gymnasium" or *Realschule*, through which the pupil will ordinarily pass on his way to the university.

In the matter of secondary education the provision is of the most varied and complete character, but there is no system by which deserving but poor scholars may rise from the elementary to the higher schools. Higher education is ordinarily the privilege of those only who can pay for it.

The "higher burgher schools," answering somewhat to our "higher grade elementary schools;" the *Realschule*, corresponding to some extent to our "modern" and "commercial" schools; and the *Gewerbeschule*, the equivalent to our "technical" or "trade" schools, have for their aim the preparation of the pupils for the higher branches of skilled labour, or for ordinary commercial pursuits.

The "higher *Realschule*" have for object the training of their scholars for mercantile and the higher forms of industrial and technical occupations.

The "Gymnasium" and the "Realgymnasium" correspond respectively, to some extent, to the "Classical" and "Modern" sides of our public schools, and aim at qualifying their pupils for admission, in the one case to the general, and in the other case to the science faculties of the universities.

All these schools, though provided mainly at the expense of the municipal authorities, are maintained principally by the fees of the scholars, which, however, seldom exceed for day scholars £7 or £8 per annum.

England.

In England the distinction between one class of school and another is mainly social, or rather financial. Speaking broadly, the working classes send their children to elementary schools; well-to-do clerks, small tradesmen, and the poorer professional classes, to schools of the grammar school type; professional and mercantile classes of moderate means to high schools or private boarding schools; while the wealthier members of the same classes and the country gentlemen send their girls to expensive private schools, and their boys to the great public schools of modern foundation, or even to those more ancient ones, like Eton and Winchester, which have almost the monopoly of the sons of the landed gentry and rich aristocracy. From such schools it is usual for the boys to proceed to the old Universities of Oxford and Cambridge, while from the grammar schools not only do boys occasionally go to those Universities, or to the Universities of Dublin or Durham, but they are now passing in increasing numbers to the colleges of university rank, recently founded in many of the larger centres of population. Of course these distinctions are by no means sharply drawn. Professional men, and others of moderate means, who are fortunate enough to reside in the immediate neighbourhood of one of the great boarding schools, frequently secure for their children, as day scholars, the advantages of those schools upon very moderate terms, while in numerous instances the more gifted children of the lower middle, or even of the working classes, are enabled, by means of scholarships, to enjoy the advantages of the great public schools, and to proceed to the ancient universities.

The most distinctive feature of the educational provision—system it cannot be called—of this country, apart from these older universities, is undoubtedly the great public boarding school, which, with many defects sufficiently patent to hide from many eyes its far more real merits, is not only specially characteristic of the country, but is one of the most powerful forces for moulding the national character, and for fitting the English people to exercise the world-wide dominion which has fallen to their lot. In this respect the "public school," as we know it, is the admiration, not to say the envy, of not a few of the more discriminating foreign educationalists. To the physical development, the feeling of self-respect and of responsibility, the power of combination, and the readiness of resource, which are the natural outcome of the system, they attribute in great degree the physical and moral energy, and the power of adaptation to the unforeseen needs of real life, which they consider to be as much characteristic of this portion

of the English people as is, in their opinion, a sentiment of what is due from them in their capacity as "gentlemen." We are so accustomed to depreciate ourselves, and to find other nations take us at our own valuation, that it is quite refreshing to discover that there is anything in our system which disinterested critics can possibly hold up as an example to other peoples.

The one branch of English education which may, with any degree of accuracy, be said to be organised is elementary education; and to that alone, therefore, further reference will be confined.

In the preceding part of this paper allusion has frequently been made, by way of contrast, to certain features of our English system; and it is perhaps, therefore, scarcely necessary to dwell upon these features here. When, in 1833, the Government of this country, for the first time, directed their attention to the promotion of elementary education, they found two great agencies already at work — the British and Foreign School Society, founded about 1808, and the National Society, established three years later. There were in addition here and there individual schools, carried on by various religious organisations. Under these circumstances the Government of the day decided to encourage and appeal to private effort, and more particularly to religious zeal, for the supply of that provision for the education of the people of which they were just beginning to feel the necessity. Accordingly it was upon an avowedly denominational basis that at this time the educational system of the country was developed. Schools were for the most part conducted by distinctive religious bodies; teachers were mainly trained in purely denominational colleges, and the inspectors of the Education Department were themselves required to be members of the communion whose schools they examined, and were selected in consultation with the authorities of that religious organisation.

By this means there had been provided up to 1870 a total of 8281 schools, consisting of 12,061 separate departments, and providing accommodation for an aggregate of 1,878,584 children. Large though the work thus accomplished actually was, it barely represented 50 per cent. of the actual need, and its rate of increase did not very largely exceed that of the population. It was, moreover, confined exclusively to the more active and progressive parts of the country, leaving the backward districts almost entirely untouched. It was clear, therefore, that some other force than private effort must be called into play if the means of education were to be brought within the reach of every child in the kingdom. It was under

these circumstances that the Act of 1870, with which the name of Forster will ever be associated, was adopted, by which it was enacted that, in default of the necessary provision being made by private effort within a given time, a School Board should be created, and required to supply the deficiency at the general cost of the district. But even then the previous policy with respect to the encouragement of private effort was not departed from; on the contrary, a further and urgent appeal was made for such effort, and a definite time was allowed for its operation. Within the next six years the number of schools rose to 14,273, with accommodation for 3,426,318 children. Of this increase very nearly 1,000,000 places had been supplied by private effort. It was now found, however, that the increase of attendance did not keep pace with that of school provision, and that, with accommodation for nearly 3½ millions, the average attendance did not reach 2 millions. The Act of 1870 had permitted, but not required, a School Board, where it existed, to make attendance compulsory within its district. Most, but not all, School Boards had availed themselves of this power; but no similar provision had been made for any district not under a School Board. The result was that, out of an estimated population of 24,444,010, only 11,221,363 were found to be subject to any law of compulsion. Accordingly, a further Act was passed in that year (1876), by which, among other things, attendance was made compulsory throughout the whole of the kingdom. In the interval which has since elapsed very great advance has been made in all directions. By the last published Blue-Book of the Education Department (that for 1894–5), it is shown that the accommodation in 19,756 schools, comprising 30,169 departments, has reached a total of 5,873,098 school places; that the number of children enrolled at these schools has risen to 5,235,887, and the average attendance to 4,254,314. Of this accommodation, 3,633,565 places have been provided by private effort, and 2,239,533 by the operations of School Boards. The number of certificated teachers employed was only 12,467 in 1870, and 23,053 in 1876; in 1894 it was 50,869; while the number of other adult teachers rose from 1262 in 1870, and 3173 in 1876, to 36,263 in 1894.

Before 1861 the certificated teachers were to some extent the servants of the State; part at least of their salary was directly defrayed by the Government; and the prospect of a pension was held out as a reward for long service or an alleviation of infirmity. But, by the Code of that year, all this was changed; the Government no longer recognised any one but the managers of the schools; and the teachers, relegated to the exclusive service of the managers, resented what they con-

sidered a breach of faith on the part of the Government, and have never ceased to cherish a feeling of grievance on the subject. Alone among the teachers of the chief civilised States, they are to a large extent employed by private individuals, are liable to dismissal without appeal, and have no general prospect of a retiring pension in their old age. They are undoubtedly—especially those employed by School Boards—much better paid than teachers in any other country, even than those in the United States, if regard be had to the purchasing power of money in the two countries respectively. But in the other conditions of their employment, a large proportion of their number are not as favourably situated as the corresponding persons in most other countries. This circumstance may perhaps be taken as some extenuation of that prominence given to personal interests at their periodical gatherings, which many of their own number, and still more of their friends outside, deplore as contrasting so unfavourably with the attitude of teachers in other countries.

The influence of national character and circumstances upon the system of education adopted in any country is very perceptible. In the American system there is everywhere visible the intelligence and fertility of resource which are the natural results of a prolonged and successful struggle with previously untamed nature; but, like a large proportion of the appliances used in that struggle, a good deal of the education given is of a somewhat superficial and makeshift character. The resemblance which undoubtedly exists between the methods adopted in the various states is due mainly to similarity in the conditions under which the different systems grew up; but it is consistent with great local variety in detail, and affords an immense field for the play of individuality among the teachers. The general absence of anything in the nature of social distinctions—except in some instances in respect of difference of colour—bears testimony to the comparatively simple character of the society in which the system itself originated; but it is showing an increasing tendency, in the longer-settled and more populous districts, to give way to some extent as the organisation of society becomes more complex.

In France the system is thorough, complete, and logically self-consistent, but in its general features it is greatly lacking in variety. Though thoroughly democratic in the way in which it ignores social distinctions, it is intensely bureaucratic in its government, and is completely dominated by the political forces for the time being in the ascendant.

In Germany the system is aristocratic and military, drawing

a broad line of distinction between the governing classes and the rest of the community. It is minute, complete, but rigid; and, although there is more local variety than in France, there is still a marked tendency to uniformity both in the methods pursued and in the results obtained. Whilst the influence of the great masters of teaching is almost unbounded, there is little scope for individual initiative in the general body of the profession; while here and there, amongst its subordinate members, there is perceptible a tendency to the slavish imitation of methods imperfectly comprehended.

In England, on the other hand, there is an almost chaotic absence of system; and everywhere educational arrangements reveal their immense indebtedness to individual effort—effort which is often found resisting, and not infrequently frustrating, official endeavours after uniformity and correlation. But these arrangements display infinite variety, and reflect faithfully the social, religious, and economic, even the racial distinctions of a singularly composite community.

Whilst, however, it is comparatively easy to trace in this way the effect of national characteristics and surroundings in moulding the educational system of a country, the reverse process of determining the influence of the system of education upon the political, economic, and moral condition of the community is by no means a task of equal simplicity.

In a democratic country ignorance on the part of the electorate is no doubt a danger of the first magnitude; and therefore a generous and widespread system of education is a prime necessity for the safe working of the political institutions of such a country. This principle appears to be well understood in the great American Republic, where not only is the citizen afforded every opportunity that is possible for the education of his children, but the "continuation school" of the daily press, the platform, and the library is developed to an extent unequalled in any other country—even, as yet, in the United Kingdom, so far as the masses of the population are concerned. In this country the political value of education is still but imperfectly appreciated, although a whole generation has now passed away since Robert Lowe declared that "we must educate our masters." There are still not a few persons of influence who, in the supposed interests of other classes, or of other forms of instruction, would artificially restrict the education of the great bulk of the population to the barest elements, and would debar the children of the artisan or the labourer, except in the rare instances where they have the ability and good fortune to win scholarships, from even entering upon those wider subjects which awaken the intelligence, broaden

the views, and lend additional interest to life. As regards the political value of education, the remark of Ernest Renan, that "the universities conquered at Sedan," is fruitful of suggestion.

On the other hand, it is frequently objected that in Germany, and some other Continental nations, education has been productive of Socialism and other revolutionary movements. But it is open to serious question whether these movements are due so much to education itself as to political institutions unsuited to an educated people.

Of the economic value of education—at least from its technical side—there will probably be less question. The enormous efforts which the more advanced nations of both continents are making in this direction bear witness to the universal conviction—we had almost said instinct—of civilised countries upon the point; and the manner in which the German is now rivalling the Scotchman in ubiquity is remarkable testimony to the efficacy of the cause to which the result is attributable in both cases. Except in Scotland, Germany, and a few of the United States, general, as distinguished from technical education has not been long enough in existence to enable us in any way to judge with confidence as to its economic value; and in these countries the question is so interwoven with others as to involve the solution in much uncertainty. For instance, it is open to considerable doubt how far the remarkable inventiveness of the American people—shown as it mostly is in devising labour-saving appliances—is due to their education, and how far to their peculiar social conditions; that is to say, whether the inventiveness itself, or merely the direction of its activity, is the outcome of those social conditions. The great inventions which in the past have revolutionised the world have for the most part been the work of irrepressible genius, very often but little indebted to anything in the nature of preliminary education. How far a course of instruction similar to that of a modern elementary school would have been an assistance or a hindrance to the development of that genius is a question upon which there may possibly be more than one opinion. But whatever may be the true solution with respect to genius, the opinion is probably sound that the increasingly scientific character of manufactures, and of many other occupations, demands better-trained intelligence on the part not only of the foremen, but of the ordinary workmen also. The special training required for this purpose is itself dependent for much of its success upon the quality of the previous general education received by the student. The Royal Commission which reported some ten years ago upon the subject of technical

instruction remarked that in its network of classes carried on throughout the kingdom in connection with the Science and Art Department, this country possessed a machinery for the diffusion of technical instruction which was unequalled anywhere else in the world, but that this machinery was not producing anything like the full work of which it was capable, by reason of the very defective preliminary training which the students had received at school. This remark probably illustrates as well as anything can do the economic value of sound general education.

Of the like value of special training, the development of the artistic faculty, which seems now to distinguish the French people, affords a striking example. Until the reign of Louis XIV., the Italians, whose country was the home of contemporary art in all its branches, used to speak of the French as almost the Bœotians of Europe, inferior both to the English and the Germans in artistic appreciation. The Schools of Art founded by Colbert, the greater minister of the Grand Monarque, have, in the two centuries during which they have been at work, so completely changed the national characteristics in this regard, that artistic feeling has now, for several generations, seemed to be the almost universal endowment of the race.

As regards the moral effect of education there are more pronounced differences of opinion than with respect either to its political or economic value. In this country, coincident with the spread of education, and, as most educationalists think, at least partially in consequence thereof, the diminution both in pauperism and in crime has been most striking. Notwithstanding an increase of nearly 35 per cent. in the population since 1871, there has been a decrease of close upon 25 per cent. in the number of paupers, from 1,079,391 in 1870 to 812,441 in 1894. In the same period the convictions of crime have fallen from 12,953 to 9634, or rather more than 25 per cent.; while during a similar period, the number of "juvenile offenders" had been reduced to the enormous extent of over 71½ per cent. No doubt these facts are due to a variety of circumstances: to improved dwellings and sanitary surroundings, to an increased standard of comfort among the general body of the population, and to a considerable advance in prosperity. But we can hardly be wrong in attributing no small part of the improvement to the spread of education, and to the great quickening of interest in social problems, which has been one of the indirect results of the Education Act of 1870.*

* See also Essays xii., xiii., xiv., and xv.

In several foreign countries there are, on the contrary, complaints of an increase of crime, and especially of a growth of Socialism and discontent. How far this is due to education itself, or to imperfect social conditions, is open to question. Discontent and its resultant evils are often a precursor to improvement, and it may be hoped that the existing state of things, so far as it justifies the complaints, is merely transitory; and that, as in this country, it will tend to diminish with improved social conditions, and especially with the extension of individual liberty.

ESSAY XVIII

THE PRESS

In trying to arrive at a just estimate of the Press as it is to-day, one is faced by many difficulties. The subject is too vast and too recent to have been classified and catalogued. To write a complete history of the times we live in is impossible, and to write the history of the journals around us, their essentials, and the position they hold, is hardly less difficult. Perhaps no other theme is so many-sided as the Press. And from this versatility arises the difficulty of description. Say, what connection, save that they are all newspapers, has the *Licensed Victuallers' Mirror* with the *Spectator*, or the *Daily Chronicle* with the *Sporting Times?* Yet all these discordant elements make up The Press, and to the careful inquirer certain things will be found common to them all.

The modern Press, as we know it, may be said to date from the year 1861. In that year two important events happened: the removal of the paper tax—the last of the "taxes on knowledge"—and the outbreak of the American War. Each had a very direct influence on English newspapers: to the one we owe the penny paper, and eventually the halfpenny paper, which has rapidly taken the foremost place in circulation; to the other the "Special Correspondent," in the widest sense of the word. There had, of course, been penny daily papers before 1861, but it was only after that date that they became common, that it became an inevitable thing that a new daily paper should cost the sum of one penny only. This is to us almost an axiom, but it has become so only since the repeal of the paper duty. The other question, the Special Correspondent, requires explanation at some length. Sir W. H. Russell had, it is true, been the representative of the *Times* in the Crimea, and in that capacity had done better work than any correspondent before or since; but he lived and worked in the days before submarine telegraphs, and is therefore cut off from the modern correspondent, as we know him. His *avenement* is, as already remarked, the American War. The United States

were by that time covered with telegraph wires, and the great New York papers sent out representatives to the front, who transmitted messages on a scale far larger than had been attempted before. What had till then been merely a dispatch, now became a news-letter; the American papers had the money, and could attract the public necessary to make the venture commercially successful. The system was not long in reaching England. When the war of 1870 broke out, there came about an alliance, very celebrated in its day, between the London office of the New York *Tribune* and the *Daily News*. The latter contributed all the exclusive information that, as member of the various Press agencies, it could secure, but a foreign paper could not. Smalley, who was London "reporter" of the *Tribune*, contributed to the *Daily News* the long and detailed accounts of the operations at the front, which he received from his special correspondents. Aided by the pen of Archibald Forbes, the *Daily News* acquired the reputation, which it has never lost, of being the best war newspaper in England. But the system of having a special representative everywhere had taken hold. Every paper now has its two or three correspondents in each European capital, besides its many reporters all over the metropolis and leading centres in the provinces.

Now, throughout the "sixties," England was hurrying rapidly in the direction of reform. It would be hard to estimate what share the Press had in helping on this work. At any rate, the majority of the influential papers were at this time strongly on the side of reform; the *Daily Telegraph* held progressive tenets, and the *Times* was strenuous in its advocacy of moderate reforms. But between the years 1868 and 1874 a great change came over journalism, namely, provincial competition. From 1830 onwards the railway had been the greatest possible stimulus to journalism, and more especially London journalism. News from all parts of the world naturally gravitated to London. From London to the provinces the only mode of transmission was the railway, and consequently the provinces bought the London papers instead of establishing their own; but the invention of the telegraph deprived London of that monopoly which the railway had conferred upon it. News sent to London is known in the provinces only a few minutes after it is being discussed in Fleet Street or Pall Mall. It is, therefore, much better for the enterprising "provincial" to collect the news into a paper printed and sold on the spot, rather than have to wait some hours for the London daily papers.

This, then, was a sound business reason why provincial papers should expand during these years. Many had existed

before; some from being weekly papers now came to be published every day; many new ones were started. Moreover, the Reform Bill of 1868 did more than enlarge the number of those having political power; it made them think; it created "provincial opinion;" the London monopoly was broken through. The results are patent enough. In the *Manchester Guardian* (for example) we have a daily journal no whit inferior to those produced in London; the quality of its articles and literary matter, and the soundness with which it is conducted, fully entitle it to a place beside the daily papers of Fleet Street. Almost the same can be said of many other so-called "provincial" papers, which it would be invidious to distinguish by name. In effect, London, though still indisputably possessed of the first place in the English Press, can no longer claim an unchallenged position, and it is always in the power of an important provincial journal to waken the country on any one point by taking a strong attitude in its leading articles on questions of national interest.

Another consequence of the removal of the Paper Duty in 1861 was the growth of the cheap evening journal. Of these there are many which are sold for a halfpenny apiece. They consist in nearly all cases of a single sheet, large or small, and have several editions appearing at stated hours during the day, the last coming out between six and seven in the evening. As the day goes on, fresh items replace in their columns the now obsolete morning news. This is particularly the case with information relating to important foreign affairs, sport, the Stock Exchange, and the police courts. Thus an evening paper tries to make up in speed of issue what it lacks in exclusive information. We have insisted on these points because they lead up to a very important feature of the latter-day Press. Now a four-page sheet has little room for anything save advertisements and news. Thus the leading article—that most striking feature of English journalism—is limited, or disappears altogether for brief editorial notes. This, it would seem, is the beginning of a change in journalism that may have far-reaching consequences. It may be mentioned here that although small shipping, sporting, and other evening "sheets" had previously been issued, the first complete halfpenny evening paper in the country was produced in Yorkshire—the *North Eastern Daily Gazette*, which, as Sir Walter Besant pointed out in a paper read before the Institute of Journalists, was the first daily paper in the kingdom to publish continuous stories.

Various circumstances have conduced to make the leader the most salient point of the English Press in the past. The Press has always been a fighting organisation, and in the early part

of the century it had very serious difficulties to contend with. Until comparatively recent times there was no telegraph, and therefore no abundance of news; and the "special" was an undeveloped force. Thus, opinion was of paramount, news of but secondary importance. A paper circulated because of the character and vigour of its opinions. It was the trenchant leaders of the *Times* that earned for it the *sobriquet* of "The Thunderer," and that phrase of the late Matthew Arnold, "the magnificent roaring of the young lions of the *Daily Telegraph*," is likely to descend to a distant posterity. Changed conditions, however, are tending to eliminate the leader. The evening papers comment on the news of the day by means of the paragraph, *the* type of all modern writing. The ideal paragraph should be concise and epigrammatic, giving in half-a-dozen lines the substance of a whole leader. And the paragraph is everywhere. Such papers as the London *Star* or *Echo* put forth their opinions either in paragraphs or else in leaderettes, which are lengthened paragraphs far more than curtailed leaders. The wish of the reading public is for something short and crisp, that can be grasped in a moment and that will not tax the brain. The Press has not been slow to perceive this, and has supplied its busy readers with articles, notes, and paragraphs, short and easy of digestion. Even those papers which cling to the leader have been compelled in some cases to modify its character. A leader in the *Pall Mall* or *Westminster Gazette* is nearly always a string of bright paragraphs loosely pieced together. The idea of a "continuous thread" on which the journalist of twenty years back would insist so strongly has largely disappeared. The halfpenny Press and increased speed of life have between them created "the paragraph" and gone far towards dethroning the "leader;" how much farther this conquest will go, it would be idle to prophesy.

But the English Press has undergone yet another influence which tends to the same end, typified in American journalism. We have seen how largely the *Tribune* was responsible for our present extensive use of Press telegrams. That incident helps us to grasp the main difference between English and American journalism. Across the Atlantic news is the all-important requisite. A paper to win in the struggle with its neighbours must be full of news, in the exact sense of that word. Thus in such a town as New York news-gathering has reached a perfection which it certainly has not attained anywhere else.

Opinion and criticism are for the most part abstract; news, facts are concrete; as a natural corollary they are often personal also. After learning *what* a man has done, we naturally inquire as to *how* he has done it. A knowledge of a man's

politics is considered incomplete without a knowledge of his personality; his writings will not afford entire satisfaction until you know his preference in pens or the colour of his necktie. This curiosity has led up to "the interview," a very noteworthy development particularly of the American Press. If you hear of any one *au fait* with the topic of the hour, it is obviously quicker and surer for you to send a representative to get at his opinions than to wait until he ventilates them in a speech or in your columns. On the whole, the system pleases the reading public, though at times it must annoy isolated individuals.

When this so-called Americanising of the English Press began it would be hard to say. Perhaps one of the principal causes was W. P. Stead's editorship of the *Pall Mall Gazette*. This took place in February 1883, on the retirement of John Morley. The new editor was fully alive to American methods and introduced them with no sparing hand. Its "Navy Scare" in the autumn of 1884 did much to improve our fleet and stimulate interest in the same. It was largely responsible for the sending of Gordon to the Soudan. It produced in the July of 1885 a series of articles—very famous in their day—entitled "The Maiden Tribute of Modern Babylon." Whatever may be said of their form—and they were emphatically the most daring, not to say indecent production that has ever appeared in the English Press—it is certain that they were the main instrument in altering the Criminal Law.

The movement received the title of "The New Journalism." It spread its influence over the whole English Press: the sharp paragraph, the caustic headline, the interview, are now met with everywhere. Interviews with prominent athletic lights are common, and the craving for *personalia* is strongly marked. People who have only a hazy idea of party questions eagerly study a series of well-told scenes in the House of Commons. A half-sarcastic, half-humorous diary of events in that House is now an every-day feature. The same hand that dispenses this form of entertainment in *Punch* gives us a soberer, if not more enduring, version in the *Daily News*. The Press has undoubtedly borrowed largely from America, and the tendency has been to depress the argumentative side of journalism and exalt to the front rank information — plentiful news, and swiftness.

The expression, "a valuable property," is not applied to newspapers at random. A late president of the Newspaper Society, which represents nearly all the proprietors in the kingdom, recently stated that the capitalised value of the British newspapers would exceed £150,000,000. Inevitably,

therefore, the business element is more predominating than when "organs" existed mainly to champion "causes" or the views and interests of individuals. We cannot sum up this change better than by saying that formerly a paper held up a banner, now it hangs out a signboard. A journal is coming to be looked on more and more as a business undertaking, whilst its political and social influence unquestionably extends with its commercial prosperity and independence of patronage and subsidies.

The newspaper of thirty years ago was thoroughly impersonal; it was pervaded by the editorial "we." The articles were all unsigned, and the secrets of the Press jealously guarded. Anonymity and secrecy were of the journalistic code of honour. Various circumstances have combined to modify the rigidity of this code. Public interest about journalism and journalists has been roused; eager inquiry is constantly made as to the *personnel* of a big paper; and, in face of this, the strict secrecy of the Press has hardly seemed worth keeping up. Moreover, the signed article has gradually insinuated itself into the Press, particularly on such matters as literary criticism and descriptions of the less known parts of the world. Every one is eager to know about Central Asia, for instance, or Africa; and the eagerness for "specialist" information is very marked in the Press of to-day. Many papers make of the signed article a special feature; their "outside" staff continues to grow. But it is in literary and artistic criticism that the signed article has made the greatest progress; it is becoming the rule for all literary articles. In this departure the weekly papers have been much to the fore. The arguments for and against anonymity require a little attention. The French, to whom we owe the signed literary article, are emphatic in their opposition. An article, they contend, loses much of its force if one does not know who is the author. They ask for his credentials, his passport. On a matter requiring real technical knowledge, such as literature, science, art, or the drama, an unsigned article is absolutely worthless.

If any considerations may be urged in reply, the writer for the Press never stands by himself; he is but the mouthpiece of the body behind him. A great newspaper has a tradition, a personality of its own, and this personality would be frittered away were each of its members allowed to sign his particular contributions to the whole body of doctrine.

There is much to be said on both sides, as we have seen. Custom is in favour of anonymity, and the signed article, if it is to prevail, must achieve its victory by slow degrees. Perhaps a just balance between the contending arguments would be this:—Daily articles on politics and social questions should

be left unsigned; they will always come with greater weight if they have behind them the impersonal force of a great paper; weekly articles, and any of a technical character on art, science, or literature, should as certainly be signed. On this point, the contention is unanswerable. The necessity of the signature maintained by the French will give us better criticism, and will remove that suspicion of log-rolling and backbiting which always lurks around the purlieus of the Press.

We have touched on several sides of the English Press; its organisation, its conventions, and its mechanism. Before we leave the subject, we must attempt some estimate, however scanty, of the position it holds in the life of the country. Whatever may have been the position of the Press in former times, there is little doubt that at present it is rather the follower than the leader of public opinion. Many prominent journalists hold a contrary view, and they can produce confirmatory examples. But with all the growing independence of thought, it is still true that in political matters the average man takes his opinions from the speeches of his leaders and the manifestoes of his party; it is not often or directly that he takes them from a newspaper. Indeed, it is difficult to point to any recent series of articles which have had a specific and really vital effect on the life of the country; the direct forces which mould it lie beyond the newspaper office. The indirect influence of the Press in diffusing information and "sowing the seeds of knowledge" is undoubtedly enormous, and more widespread than at any previous period in the world's history. There is generally, in the original writing, higher literary quality, fuller and more accurate information, and a conspicuous desire to be fair and historically reliable.

Again, the telegraph and the Press Agency have exercised a levelling force. They have given equal chances to every journal, and special advantages to none. In fact, exclusive information on any subject is becoming harder and harder to obtain. There is scarcely a corner of the world in which one agency or another has not an acute observer; and the sums expended by the leading morning or evening papers on telegrams are concurrently large, and on exceptional occasions fabulous. Each year it gets increasingly difficult to start a newspaper; the growing cost of production, the enlarged size of sheet, the excessive competition, all tend to render the daily newspaper almost the only remaining monopoly. And it ought to be added, that whilst a successful newspaper may be a "mine of wealth" not easily destroyed, it is terribly true that no class of property is so difficult to create, and on no kind of enterprise has capital been more seductively and disastrously expended.

No sketch of the modern Press, however short, would be complete without some mention of foreign journalism. The *details* of the Press, as distinct from its essentials, will vary with the idiosyncrasies of individual nations, and we can best gain an idea of foreign journalism by noticing some of the main points in which it differs from our own.

As to French newspapers, the first thing to notice is that, as the French travel but little, their foreign news is scanty and meagre. They care little for the affairs of other nations, and do not care to chronicle their doings at any length. Again, the columns of advertisements which fill so much space in English papers are non-existent in France. On the other hand, the quality of their criticism, political and literary, is in general beyond what the English Press can show. Since the Revolution, and even before, the publicist and journalist (for in France the two terms are almost convertible) has been a much more important person than in England. We may have greater men, but their personality is hidden. The list of French journalists contains some of the first stylists of the century, and also some of the most influential of French statesmen. Political questions are so much more burning in France than with us, that it is small wonder if their political articles are acrid and have been of such vast influence. Owing to the absence of the two-party system in France, there is a multitude of newspapers, each vigorously supporting the opinions of some party or sect directly controlled by the leaders of the same. Political life is far more subdivided and split up than is the case over here, and the power wielded by each individual journal is proportionately greater. Their literary criticism, again, is much above the average attained in England. Here can be seen the full effect of the signed article. It prevents a well-known critic falling below his normal level or putting out any work that is really inferior; were he to do so, the quickest-witted of people would soon inform him of the fact. Literary articles play a far larger part in the French daily Press than they do in the English. Articles which with us would find a fitting place in the *Spectator* or the *Saturday Review* must be looked for in France in the *Figaro* or the *Journal Illustré*.

The indifference of Parisian journals to "news" has its bad side.[1] A French journal but too frequently publishes only the news which tells for its own view and calmly ignores or misrepresents anything unfavourable; it will distort facts, disregard accuracy, and catch at any rumours which may dis-

[1] It is a notable fact that the *Petit Journal* with its "bits" of news, often two or three line paragraphs, and its short story, has attained the largest circulation of any paper in the world, issuing over 1,000,000 copies daily all over the Continent.

credit its foes; at the best its foreign telegrams are but a *rechauffée* of obsolete news. To this indictment the *Temps* and the *Journal des Débats* are honourable and striking exceptions, and there are many other papers which exhibit great impartiality in their statement of events. The want of advertisements may perhaps be deplored; their lack deprives Paris journals of that stability and caution which marks those of London. If as an impartial news-gatherer, and in its general journalistic character, the French Press falls behind our own, it in some instances surpasses us in the vigour and striking individuality of its writing, and fills a high position in the life of its great Republic. Recent scandals have somewhat tarnished its reputation; but we still believe that the great French—like all the English—newspapers are above corruption.

The Belgian Press, as apart from the French, has a well-marked individuality. The majority of the papers are purely local, read only in the town or district in which they are published; most of them are defective in general news, all are well written, and a few have elements of greatness. We may name the *Independance Belge*, which still retains much of its once unique European reputation and is conducted with spirit and intelligence. The majority of the Belgian newspapers are Democratic in tone, and the freedom of the Press is as complete in Belgium as it was in 1855 when Mr. Gladstone pronounced its eulogium.

We have just been dealing with a country where the Press is more distinctly effective of results than in any other part of the globe. If we turn to Germany, we shall find ourselves in a country where the Press has little or no power. German newspapers are for the most part politically impotent. The German Government is entirely paternal in its methods, and the freedom of the Press must be understood in a very limited sense. It was only in 1848 that it was freed from some of the most burdensome of the many restraints laid upon it, and even the moderate degree of freedom then accorded was withheld from the smaller German States till 1874. Before those dates, every issue of the journal had to be sent to the police and by them approved ere it could be published; with what irritating delays and inconveniences we leave journalists to imagine. Even now a copy of each issue has to be lodged with the police after publication, and these functionaries are very severe on anything like *lèse majesté* or incivility to the powers that be. A writer is held personally responsible for his utterances, and is not allowed to shelter himself behind a "dummy" editor or to shift the blame on to another man's shoulders. Domiciliary visits

are common and police regulations numerous and burdensome. It is not in the nature of things that a bureaucratic system should look with any pleasure on a free Press, and accordingly the feeling of the official classes towards the Press is one of mingled suspicion and contempt.

Most of us know the uncomplimentary opinions expressed by Prince Bismarck on quill-drivers and their ways; not so many of us are aware that he used the Press for his own ends, and found in his hired writers a most valuable aid. They fought his battles, eulogised his "acts of power," and trounced his enemies. His favourite and usual medium of opinion was the *Norddeutsche Zeitung*, and having then complete control of this newspaper, he could make it say what he liked.

It must not be supposed, however, that there is any lack of newspapers in Germany. Berlin contains nearly as many daily papers as does London itself, and they represent innumerable shades of opinion. Thus we have the *Tageblatt*, which is managed by Jews, and written with conspicuous ability in the interest of that race; the *Vorwärts* and the *Volks Zeitung*, which are written for the proletariate and hold advanced, almost socialistic views; the *National Zeitung*, whose politics are dull, doctrinaire, and rather pedantic; the *Vossische Zeitung*,—*Tante* (Aunt) *Voss*, as it is unkindly called,—which supplies the German bourgeois with mental pabulum; the *Norddeutsche Zeitung* and the *Post*, which play the part of Government jackals. Besides those we have mentioned there are many others which it is needless to name. On a much higher level are some of the leading provincial papers—the *Kölnische Zeitung*, to wit, which is quite the best paper in Germany; nor are the *Frankfürter Post* and the *Frankfürter Zeitung* far behind. All these papers have independence and convictions. But for the most part German newspapers have not a tithe of the influence of those across the Rhine or the Straits of Dover. Outside the constant jealousy of Government we may note several reasons for this.

In the first place, there is no such thing in a German journal as the column which an English paper styles "Letters to the Editor." No one who has ever picked up the *Daily Telegraph* during the silly season can doubt that these letters often contain more folly than sense, and the stuff that the average householder will send to a newspaper under the impression that he is putting forth some absolutely new idea has passed into a byword. None the less these "Letters to the Editor" form a very useful means of giving publicity to all manner of needs and grievances; they indicate in some measure the feelings and desires of the average man, and they are a

very healthy element in the English newspaper. They are entirely lacking to the German Press. Perhaps under the excellent German Government there are no grievances worth stating; perhaps there are. Any way their Press has not this means of feeling the national pulse, and suffers in consequence.

Yet another reason for the impotence of the German Press is the way in which it obtains its news. There is in Berlin a News Agency something like the London "Central News" or "Press Association," which is called "Wolff's Press Bureau." It is supervised by Government, and does not send out any information until it has received the official imprimatur. If Government so desires, the news in question is altered and watered down until it is fit to be received by the public outside. Wolff is in close connection with Reuter's Agency, and consequently the news that finds its way to London has sometimes to be received with caution, owing to the aforesaid proclivities of the German officials. In return for these complacencies the Government supplies Wolff's Bureau with "inside information," and gives it priority in despatching the same. This is the system which is known—and very unfairly known—as the "Reptile Press." As a natural result of this, the German newspapers are always slow and behind-hand in their dissemination of news. They take but little interest in foreign affairs, and systematically help themselves to the London reports where the Paris Press only does so occasionally. When they do not rely on London sources, their news is invariably flat and meagre, scanty and behind the times. Partly this is the result of the poverty of the German newspapers; many cannot afford to pay special correspondents; moreover, the slight importance of these journals does not justify any one of them making a new venture and incurring heavy expense in the hope of an increased circulation.

One of the bitterest complaints of Germans against England is that they read and chronicle everything of note that is published in London, while the English are supremely indifferent to what is said in Germany. The answer to this has already been explained. A curious and to us strange feature of the German newspaper is the *feuilleton*, which invariably appears at the foot of the first page. These, strange to say, are in the majority of cases translations from contemporary English novels, and but rarely original work.

While the German daily papers have no claim to stand beside those of England and France, their illustrated periodicals are good and readable. The matter is well written, and the illustrations are as good as anything that can be found elsewhere. *Daheim* and *Ueber Land und Meer* are excellent examples of illustrated journalism, and challenge favourable

comparison even with the *Pall Mall Magazine* or *Weekly Budget;* while *Fliegende Blätter* is, to our thinking, often superior in art and humour to *Punch* even, let us say, or the *Petit Journal Illustré.* At any rate, they exhibit the artistic and literary qualities of Germany to much greater advantage than do their daily newspapers.

We have descanted at some length on the business principles which pervade modern journalism. They speak of system and organisation; but until the other day the units, though so well organised in themselves, were isolated from each other and had no inter-communication. Journalism was not a profession in the sense that law and medicine are professions. Indeed, this was a serious complaint that could always be urged against the Press; it had no centre, no rallying-point to which appeal could be made. From a lawyer or a doctor we require a proof of his fitness, a *testamur* from some central body, but from the journalist no training and no certificate was asked. Not being brought into personal contact with the journalist, as the public is with the lawyer and the doctor, it asked no questions. Much, however, has been done of late years in the direction of organisation, and a definite effort has been successfully made to give to journalism a professional status. Some notice here of the movement is therefore necessary.

The first steps came from the North and the Midlands. In 1884 certain journalists met in Manchester, and discussed the question of Press organisation. By the October of the same year the "National Association of Journalists" was formed at Birmingham, and already comprised a representative membership to justify the name it had adopted. It, however, began to stagnate. As a mere voluntary combination it had no legal status or defined power, and scattered as the members were all over the country, it was impossible to keep them in touch with each other. Out of it sprang the conception of an Institute of Journalism. A new and more aggressive movement was commenced; journalists everywhere rallied to the call; committees were at work in every centre, and in 1888 the pioneers came to the conclusion to petition the Queen for a charter of incorporation. The name Institute of Journalists was adopted, and in February 1890 a charter obtained; a very speedy recognition for a body so recently formed, and emphasised in the fact that the charter confers privileges and powers—a scheme of examination for admission, granting diplomas, regulating all professional interests and needs, &c. Many objections were urged against this scheme by those journalists who preferred the old isolation

and freedom, but its advantages were so obvious as to overcome all opposition, and the membership steadily increased to four thousand, divided into "districts," with local autonomy; a General Council meeting in different centres four times a year; numerous committees, dealing with specific questions; an annual conference, at which all matters of "imperial" concern are discussed and dealt with. The influence of the organisation, representing all who form, guide, or express public opinion throughout the British Empire, is a significant aspect of nineteenth-century progress.

Journalism has had to struggle hard with the avowed dislike of those in authority. It has actually been taken as an axiom with rulers, aristocrats, and others that a pressman has no morality, and will not scruple to ally himself with the worst elements in the State. We do not say that such ideas are formulated nowadays, but the spirit which prompted them still exists, and as a consequence we have the present unsatisfactory law of libel. Bad as it still is, it is in every sense better than it was fifty, or even fifteen or twenty years ago. For instance, a newspaper has now obtained the inestimable right of making fair comment on a matter of "public importance." But there is still much doubt as to the meaning of "fair comment," and the Courts often interpret the words in an illiberal spirit. Now, a corporation such as the Institute is far better able to bring pressure to bear on Parliament than the scattered petitions of a few newspaper proprietors.. And the Institute—composed exclusively of recognised journalists or associates being trained for the profession—co-operates in all such common interests with the venerable Newspaper Society, composed of proprietors and managers; they obtained in 1886 one improving Act, and continue to urge further reforms, always asking, not for license, but for well-regulated liberty and deliverance from extortion. The full attainment of the freedom of the Press has been a slow but steady process—a constant struggle against prejudice, corruption, and the "powers that be," self-constituted or otherwise.

The position that the Press should be assigned now and in the near or distant future is a problem that has long been discussed, and is not yet ripe for solution. It is difficult to estimate fully, and impossible to sum up in tangible form, the many-sided influence of an agency so widespread, diversified, and subtle. It may be easy to exaggerate the power and possibilities of the Modern Press; it is easier to overlook or undervalue them. The advance in every department has been

enormous over the last quarter of the century; the process goes on with ever-increasing rapidity and resources; and notable in the highest degree is the fact that all this growth is conterminous with the extension of popular education and political enfranchisement.

Look only at the material side of the Press. Well within twenty-five years, a small sheet of four pages was uncomplainingly accepted by readers as adequate; and a circulation of 20,000 per day or per week would have been considered large. The same newspapers that in early or middle life had attained "these historic dimensions," now consist of eight, twelve, sixteen, or in case of weeklies, often twenty-four to thirty pages, including fifty to eighty columns of literary matter and advertisements; they circulate by tens or hundreds of thousands, many of them reaching fifty or a hundred and fifty thousand copies a day; whilst some of the leading weeklies approach five hundred thousand or a million copies per issue. Proprietors who regarded an income of hundreds or thousands a year as yielding a sufficient return on the capital invested, now count their revenue by tens of thousands.

Any one who honestly attempts to realise what all this wonderful production involves and implies will find the task perplexing. In town and village, into every hamlet and home —humble and high—the "white-winged messenger" penetrates with its thoughtfully-arrayed intelligence from every part of the world, and its sensible or brilliant expositions of public questions, and advocacy of definite opinions or far-reaching schemes bearing on every interest affecting human life. It percolates like the dews of heaven on the thirsty soil, and plants its seed deep at the morning hour, at noontide, or when darkness falls. The cumulative effects, present and prospective, must be manifold and enduring.

It is not surprising that the views of eminent men on this subject should vary according to their training and circumstances. The great Napoleon once declared that he would rather face ten thousand armed men than four hostile newspapers; and Bismarck, when at the height of his power, sardonically intimated that he regarded the journals as only so much paper blackened with ink! Thackeray makes one of his immortal heroes speak of "the mighty instrument which makes or unmakes ministers, which crowns or uncrowns kings." John Bright, the most simple and sententious, at the same time the most eloquent of speakers, once said, "Every morning I read the newspapers studiously, and it lasts me for the day. I discuss the large circle of topics that are in the morning paper, I discuss it with my friends, we thresh things out;

we look at them in all their bearings, and I cannot conceive a stronger duty of a citizen than to acquaint himself with the facts that the morning newspaper presents to him, and to consider their bearing upon himself and his friends." The expressed estimates of public men may differ, but the experience of those qualified to judge is that the best men promptly appreciate the influence of the Press, and that those who assume to despise it are, behind the scenes, found to be the most zealous and unscrupulous in their efforts to secure its approval and support.

This impressive monument of intelligence and effort has not been built up in a day. The Press as well as the Pulpit has its record of martyrs; and in its struggle for personal and professional freedom it has ever fought for the wider freedom of nations. Although many other newspapers have outstripped it in the race—in extent of circulation and direct inspiring influence—the history and position of one great British journal constitutes a factor in the advance of civilisation, and can never be overshadowed. The liberty of the Press, still hampered and harassed by needless and vexatious legal restrictions, has been achieved by years of toil and sacrifice. In the struggle a few still surviving and powerful organs of opinion have shared, but no one has taken a more conspicuous and honourable part than *The Times*. The same, in only a lesser degree, because their opportunities have been necessarily restricted, can be said of many great newspapers, Liberal and Conservative, which stand out before all competitors a glory to British journalism and a triumph of enlightened enterprise; nor would it be fair to overlook the enterprise and literary ability of some of the leading French, German, and, above all, American broadsheets.

An instructed and impartial inquiry into the sources of this strength is full of significance. Doubtless there are numerous exceptions to the general rule; narrowness, insular prejudice, party bitterness, self-seeking are to be found here as elsewhere, but the vast majority of newspapers, morning, evening, and weekly, are incorruptible, and conducted not merely for profit, but also as mediums of public instruction and instruments for the promotion of causes which their owners honestly endorse and believe to be for the public good. The universal knowledge and literary culture, the high moral standard and uncompromising devotion to a principle or party, rather than to individuals or time-serving interests, are general characteristics which have earned for the Press its reputation for ability, probity, and patriotism. It often disinterestedly furthers charitable and philanthropic movements, exposes abuses, and stimulates the pioneers of progress in every domain of thought.

Rightly conducted, it is a history and reflex of its time in daily or weekly chapters, at once creating and focussing public opinion, a terror to evil-doers and a praise to them that do well.

As already remarked, unlike other great professions, art, medicine, and law, journalists till recently were not combined for personal or professional purposes. Now the process of organisation, in which it was the writer's privilege to take an aggressive part,[1] is far advanced; the scope of the movement has already been fairly indicated; and although there may be moments of retrogression and elements of danger, its permanence and wholesome progress are assured, for journalistic organisation has rapidly spread into other countries, and in Belgium, France, America, &c., has taken firm root. The lofty ideal of International union has been realised, and each year in some great city are brought together for friendly intercourse and professional help accredited representatives from every country. These congresses have entered on a difficult as well as a noble task; both inside and outside their own ranks they have prejudices and difficulties innumerable to overcome. Some may unthinkingly fear that an irresistible International trades union is being formed; mere party politicians—not statesmen of comprehensive vision—may be alarmed for the cliques and caucuses; enemies of freedom and peace may dread the exposure of their designs;—all these and many other obstructive elements stand in the way, but there is the obvious assurance of healthy and corrective competition as between the newspapers of different countries, and there is the inherent condition that differences of opinion and interest exist in the ranks of journalism as elsewhere, so that one set of writers are always ready to controvert or counteract any dangerous scheme that might be advanced by the other or suggested from the outside. The real tendencies must be to remove national prejudice, foster goodwill, and make for mutual understanding, and for peace. At representative and influential congresses held in Belgium, in France, and in Hungary, there have been laid deep the foundations of a true republic of letters —the democracy of journalism.

"In these later times," as it is powerfully put by T. H. S. Escott in the *International Review*, "English newspapers have left their moral impress upon the foreign newspaper system, even though insular publicists have not yet equalled the literary felicity and skill of their foreign exemplars. In other words, the intellectual public of Europe, notwithstand-

[1] *i.e.*, Sir Hugh Gilzean-Reid.—Ed.

ing the geographical divisions of mountain ranges and seas, acquires more of unity and solidarity as the end of the century approaches. The Press consequently tends more and more to become, if an arithmetical simile may be adopted, a common denominator in European thought. As such, notwithstanding periodical tendencies to patriotic chauvinism, a newspaper public co-extensive with the civilised world must, if wisely controlled, generally be favourable to the prevention of national misunderstanding, and therefore to the promotion of international amity."

ESSAY XIX

FREE LIBRARIES AND MUSEUMS

In order to be able to appreciate the facilities which are afforded in our day to all classes of readers, it is desirable to glance hastily at the means which were at their disposal at an earlier period of this century. Amongst the popular publications that appeared in the first half of the century were the *Penny Magazine* and *Chambers' Tracts*, of which the circulation was very large. The Messrs. Chambers may be said to have been the pioneers of cheap information for the people, and between the years 1838 and 1850 they issued a series of valuable works on English literature, science (as it was then understood), art, and manufactures, which are still to be found on the bookshelves of the present day, side by side with the valuable "Encyclopædia" which has just issued from the press of the same enterprising publishers. The Groombridges, at a somewhat later period, gave the first popular impulse to natural history, their *Recreative Science* being the first cheap periodical tending in that direction. The popularisation of poetry and fiction must be divided amongst many pens and many publishers. Walter Scott, Wordsworth, Coleridge, Maria Edgeworth, Southey, Miss Mitford, Hood (whose immortal "Song of the Shirt" was one of the earlier appeals to philanthropy), Dickens, and Thackeray, with a host of others, spread the taste for reading at home; whilst Mrs. Stowe's "Uncle Tom's Cabin," just revived as a drama, along with the fascinating Indian stories of Fenimore Cooper, awakened the same spirit across the Atlantic; but, after all, the agencies other than the bookseller for the circulation of literature likely to conduce to the elevation of the mass of the people were, before the existence of the free library, very limited. It is true there were "circulating libraries" as far back as the middle of the last century, and early in the present one a few small shops issued feeble novels and other less innocuous volumes; but the class of works which are now sent out by Mudie, the modern representative of the "circulating" library, were only to be had by purchase. Mudie

began business in Cheyne Walk, Chelsea, as a small newspaper vendor (long before that place had attained its classical celebrity from Carlyle), where he issued books at a penny per day. These were, however, at first confined wholly to fiction, as are still to a large extent the issues of many more pretentious circulating libraries in our day. Finding the library more lucrative than newspaper vending, Mudie extended the former to include the best works on history, travels, and other departments of literature, and this necessitated, in 1852, the removal of the business to the present premises in New Oxford Street. In 1864 the establishment was turned into a company with limited liability, a property then worth about £100,000, and the "Mudie" of to-day, having grown and grown, is now by far the greatest of all circulating libraries. It is said Mudie's have always over three millions of works in circulation, whilst the issues and reissues in a busy season often mount up to 100,000 volumes in one week. The sale of works on railway bookstalls by Smith & Son (literature for travellers being naturally of the less serious kind), and by such firms as Day & Sons, Routledges, &c., has done something to disseminate cheap literature amongst the masses.

In the year 1849 a Select Committee of the House of Commons was appointed, on the motion of Mr. William Ewart, M.P., to report the best means of "extending the establishment of libraries freely open to the public, especially in large towns, in Great Britain and Ireland." All the evidence taken upon the subject went to prove that the labouring population would be far more advanced if they had opportunities such as were afforded by public libraries in other countries; and Mr. Ewart, in presenting two petitions from the inhabitants of Birmingham complaining of the absence of public libraries, made the following statement: "There was one instrument of public improvement common to foreign countries which did not exist in this—he meant the institution of public libraries freely accessible to the public. . . . He believed that the want of such institutions had been a serious damage to our literature. While for a hundred years the writers of the Continent had the consultation of public libraries at their command, those of England had wanted them."

Accordingly, in the year following the appointment of the Select Committee, namely, in 1850, Mr. Ewart introduced into the House of Commons his Bill "for enabling Town Councils to establish Public Libraries and Museums." The powers to be granted were permissive, and a rate of ½d. in the pound was allowed to be levied. Of that limited sum, however, nothing

was to be expended on books; only on buildings and contingent expenses! This was the thin end of the wedge, and the mode in which it was received is characteristic of English politics and politicians. The Bill was favoured by the Liberals on party grounds. Hume considered it a scheme to get the *Daily News* and other Radical newspapers on file; three members of the Universities spoke and voted against it, but it was eventually carried by a majority of 10 in a House consisting of 212 members.

Manchester, Liverpool, and Bolton were the first three towns which availed themselves of Ewart's Act, and in 1854 its provisions were extended to Scotland and Ireland. The benefits of the Act soon became apparent, and the movement spread rapidly. At first it was concluded that books on theology and other highly controversial subjects would have to be excluded; but the experiment of admitting such treatises having been tried in the libraries of Manchester and Liverpool, all apprehensions on that score proved groundless, and it was soon recognised that the tendency of the free library was to create a healthy appetite for reading, and to develop the moral, intellectual, and religious nature of the poorer classes. So marked, indeed, was the encouragement, that in 1855 a more liberal Act was passed enabling municipal bodies to levy a penny rate, which was allowed to be expended in books, as well as for the objects already referred to, and the establishment of free libraries was permitted in any town having a population of 5000 and upwards. The scope of the Act was further extended in 1866 by removing the limit of population, whilst in 1871 and 1877 other amendments were passed.

Strangely enough, although there are at the present time more than three hundred free libraries established in the United Kingdom under the Act, there has been in this respect remarkable apathy in the three capitals. In London this is probably owing to the absence of a great central municipal authority; for the Guildhall Library, under the immediate management of the corporation, has been highly successful, and out of fifty-four divisions sufficiently large to support a library rate, we find only twenty-seven parishes with public libraries. Dublin established two, without adopting the Acts, in 1884, whilst Edinburgh rejected the Acts in 1883, and only adopted them in 1886, when Mr. Carnegie offered a sum of £50,000 on condition of their adoption. The United States are far ahead of this country in free libraries. One or two marked social and educational features have become prominent in connection with the formation of such institutions at home. There has been, as might perhaps have been anticipated, a

preponderating demand for prose fiction—in Liverpool, 79.79 per cent.; in Manchester, 78.45 per cent.; and in Birmingham, 64.21 per cent. of the whole; and perhaps it is not going too far to say that the diminishing proportion of such works called for in the respective places affords a measure of the comparative intelligence of the working classes inhabiting them. Another and more satisfactory result is the establishment of branch lending libraries; indeed, it would appear that the public require not alone water and gas, but even the illuminating agencies of literature brought to their very doors. But there has been still another consequence, namely, the establishment of a powerful and widespread society, the Library Association of the United Kingdom, of which the aim is to foster the free library movement, and generally to cultivate bibliography. It reckons amongst its members not only persons holding appointments in libraries, but all who take an interest in literature, and its organ, *The Library*, edited by Mr. MacAlister, forms an interesting record of bibliographical and literary progress. Indirectly, if not, indeed, in some cases directly, the Library Acts have brought into play many other useful agencies for elevating the masses. Free lectures are now considered a popular sphere of action in connection with the free libraries of some of the larger towns. In Liverpool they have been carried on for a long period with an average nightly attendance of about 1500 persons, mainly working men, and the subjects and illustrations, chiefly by limelight camera, are becoming more and more useful and instructive. The use of the libraries by students, too, has led to a more extended utilisation of the museums attached to them, to the establishment of picture galleries, and generally the movement has popularised and developed every branch of art, science, and literature.

We have said that the United States are in the van as regards the free library movement, and this is all the more remarkable as they have not enjoyed the opportunities of gradual accumulation afforded by centuries in the Old World. As far back as 1731 Benjamin Franklin proposed to the "Junto," a literary club to which he belonged, that members should bring their books to the club, where all might enjoy their perusal. From this sprang the Philadelphia Library Company, the parent of all North American subscription libraries. During the last forty-five years the movement has made rapid strides, having been fostered and promoted not only by the State authorities, but by private individuals; indeed, a considerable number of the more important libraries have the name of some person in their title, denoting that one or other of the

spirited citizens has come to the rescue where the means of the community did not suffice to provide such an institution. As a rule the American libraries are governed by trustees appointed by the people. The State appropriates sums of money for their establishment and maintenance, and has gone so far as to provide instruction in library science. Each State possesses its own official library. As far back as 1876 the United States Government Report gave a list of 3682 libraries, containing over 12 millions of volumes; New York State alone now contains 500 libraries; Massachusetts, 508; and the total number in all the States exceeds 4000.* Boston has recently opened a really magnificent building, far finer than any other American library. It cost 2,368,000 dollars (more than half a million sterling), and has accommodation for two and a half millions of volumes. They print their own book lists, and possess an elaborate binding establishment. The building already contains a number of valuable libraries of historical and antiquarian interest.

Returning now to the Old World, it will be appropriate to say a few words concerning its great national libraries. Entitled to the first consideration is the Bibliotheque Nationale in Paris, which held, in 1881, 2,237,000 volumes upon its shelves, besides containing a great many valuable manuscripts. The Revolution enriched it with the forfeited collections of many private persons and religious communities. Paris contains, besides, sixty public municipal libraries, although many of them are very small. An important feature of the library system in France is the municipal school libraries, a very large number of which are to be found all over the country. Germany has many large State libraries, notably those in Berlin, Munich, and Dresden, all of which contain extensive historical collections. In Berlin the Royal Library was opened in 1661, and now contains more than 800,000 volumes; it is entitled to a copy of each book published. There are seventy libraries in Berlin, and the people's libraries, the first of which was established by Von Raumer in 1850, are twenty-seven in number. Eighty per cent. of the books read are fiction. The Munich library is perhaps, however, the most important in Germany. It has upwards of a million volumes, 26,000 manuscripts, and is particularly rich in incunabula (works printed before 1500). Dresden has forty-nine libraries, the Royal Library being the most important. Italy is rich in old libraries; there are thirty-two important collections, possessing endless manuscripts and incunabula. The National Library of Florence has over 400,000 volumes, and many of the universities possess libraries

* *The Library*, vol. viii. p. 124.

of the first class. The Vatican, perhaps the oldest library in Europe, has 220,000 volumes, most of them exceedingly rare, and its collection of 25,000 manuscripts includes some of the most precious in the world. The Vatican is the private library of the Pope, but scholars are granted permission to use its contents.

Coming back to our own country, it is hardly possible to furnish statistics of volumes and readers. This applies even more to London, owing to lack of reports; but the following figures will convey some idea of the operations of important libraries:—

Name of City or Town.	Number of Volumes issued in 1894.	Number of Readers.
Manchester (11 Branch Libraries) . .	1,058,315	49,516
Birmingham (9 „ „) . .	795,711	29,077
Liverpool (4 Lending and 1 Reference) .	543,001	12,590

Manchester levies a rate of 2d. in the £; Birmingham, 1½d.; and Liverpool, 1d.

Of all the libraries of the world, that of the British Museum is exceeded in extent by one only, the French National Library. It possesses about 1¾ million of books, and nearly 100,000 manuscripts and charters. It was founded in 1753; the collection of Sir Hans Sloane, numbering 40,000 volumes, was purchased by the nation in that year for £10,000, and the Cottonian and Harleian manuscripts were added by the Government. In 1757 George II. added the Royal Library of the former kings of England, and the present library continues to enjoy the privilege so long held by the former of receiving one copy of each book published for sale.* The library was first opened to the public in 1759, and it has now nearly 200,000 readers annually. It has thirty-nine miles of shelves, and its catalogue—the printing of which is expected to be completed before the end of the century—will consist of about 600 large quarto volumes.

A few words must be added concerning our other great libraries which may be termed national. The Bodleian, at Oxford, owes its origin to Sir T. Bodley, and was opened in 1610. It contains 430,000 volumes and 30,000 manuscripts; in the department of Oriental manuscripts it surpasses all other European libraries. The Advocates' Library in Edinburgh is the most important in Scotland, was established in 1682, and contains 280,000 volumes and 3000 MSS. Trinity College Library, Dublin, is contemporaneous with the Bodleian;

* The same privilege is extended to the Advocates' Library, Edinburgh; the Bodleian, Oxford; Trinity College, Dublin; and Cambridge University.

it possesses 210,000 volumes and a large collection of Irish manuscripts.

In addition to the particulars here given concerning our home libraries, the fact should not be lost sight of, nor its importance under-estimated, that similar institutions are being multiplied with incredible rapidity in our colonies. To take one instance only—the last returns from Australasia show that in the seven colonies there are already 1180 public libraries, containing close upon two million volumes. Those in Melbourne and Sydney are splendid institutions, the former comparing favourably with many of the libraries in European capitals; and there, also, the libraries have in many places other educational agencies attached to them.*

In fine, it may be said without fear of contradiction that in all civilised countries there are libraries free to almost every class of the community, which are rapidly growing in extent, numbers, and usefulness, and the advantages they afford are above all estimation. There is no doubt that in this, as in all public movements, however useful and elevating their tendency, there are to be found objectionable features. It has been said that the free library movement is proving a failure on account of the excessive demand for prose fiction, but "fiction" is a comprehensive term, and before a correct judgment can be arrived at, more information is requisite. Surely it is of greater advantage to the poorer classes that they should read the works of Scott, Bulwer, Dickens, Thackeray, and George Eliot than the demoralising details of "real life" with which the columns of some of our daily papers are crowded, and to which their reading would be restricted but for the free libraries. It was not to be expected that the unfolding of the literature of the whole world, ancient and modern, to the mass of the people would at once transform the ignorant and uneducated into eager and enlightened students and scholars. Is it not rather to be wondered at and admired that in Birmingham a third of the whole body of readers prefers the more solid and enduring pabulum afforded by the heavier literature of its public library, to the light and fleeting enjoyment of novel reading?

But, on the other hand, how inestimable are the benefits of these institutions to every class! It is an established fact, and a significant one, that the number of books sold by booksellers where there are free libraries is greatly in excess of the trade in places where there are none. That means that authors, young and old, those struggling to attain fame and

* Government Statistical Report for 1894, by T. A. Coghlan. Sydney: Charles Potter; and Petherick, Melbourne, Adelaide, and London.

a livelihood, as well as those whose reputation is established, are receiving help and encouragement from the free perusal of their works; it means that private reading clubs are being formed, in which the higher class of books and magazines is circulated amongst the middle ranks, and that men are generally living for something more ennobling than trade and barter. The respectable "unemployed" find the reading-room a safer resort during their idle hours than the street corner, with its inevitable gin-palace; and even the personnel of the libraries themselves is opening up a field of useful employment to young men and women who have fitted themselves for something higher than the shop-counter, or even the trader's office-desk. It may safely be predicted that the free libraries, museums, and free lecture-halls of the future will constitute one of the most important factors in the progress of civilisation and enlightenment.

ESSAY XX

INTERNATIONAL EXHIBITIONS AND THEIR CIVILISING INFLUENCE

In order to appreciate the rise, growth, and significance of that special product of the present century, the International Exhibition, it will be well to glance briefly at the history of exhibitions in general, and to show when and where the idea of making them international arose, and the struggles which attended its development.

Exhibitions are of comparatively recent date. It is true that Athenæus describes a pompous function in the eleventh century B.C. as being an exhibition of articles of luxury from Egypt, such as valuable furniture, precious vases, and rich materials; but its object was more to gratify personal vanity than to afford subjects for general instruction and emulation. Neither is there much connection between modern exhibitions and the fairs of the Middle Ages, which were merely the substitutes for permanent shops at a period when transit was difficult and trade intermittent. Some of these fairs survive to our days, the most important being Leipzig and Nijni-Novgorod, while the most curious is the great Egyptian Fair of Tantah, which is held in tents. Here Greeks, Albanians, Armenians, Persians, and Syrians, in their varied and picturesque costumes, intermingle with sombre-clad traders from the West; and cutlery from Birmingham or Germany is shown in one tent, while Syrian silks or Persian embroideries dazzle the eye in another.

It is not till the year 1268 that any trace can be found of the barest attempt to illustrate the industries of any country by means of mutual association, but in that year an industrial exhibition was held in Venice as part of a display which also included a water fête and a procession of the trades. It was a customary thing for the tradesmen to display their wares on these occasions, and thus add to the general effect; but in 1268 there is a distinct element of combination, which is the basis of

all exhibitions in the modern sense of the word. In 1470 a very interesting attempt was made by France to form a French Exhibition in England. Louis XI. was desirous of creating foreign markets for French commerce, and profited by an interval in the Wars of the Roses to enter into negotiations with the Earl of Warwick for a treaty to enable the two countries to exchange each other's merchandise free of customs duties and of harbour and landing charges. For this purpose he authorised two rich bankers of Tours, the Brothers Briconnet, to collect and exhibit in London specimens of French products, natural or manufactured. These products were to be admitted free of duty under prohibition of offering them for sale. The plan was carried out with great zeal; but when the goods arrived at their destination, it is said that Warwick seized the greater part of them and turned them into money, under the pretext of constituting therewith the funds necessary for a regiment of troops which he was about to put at the disposal of Louis XI., but which, however, he never despatched. The remaining goods were re-embarked on account of the Civil War, and fell into the hands of pirates, so the undertaking ended in complete failure.

Exhibitions, properly speaking, date from the eighteenth century, and the honour of having created them is due to France. At first, however, these exhibitions were limited to the fine arts.

In 1797 the Marquis d'Avèze arranged in the Château Saint-Cloud an exhibition of objects of art, with a view to the disposal of a large stock of tapestry, china, and carpets on hand in the large manufactories of the Gobelins, Sevres, and the Savonnerie; the warehouses being filled with the choicest productions and the workmen reduced almost to starvation.

Having obtained the consent of the Government to his proposal, he proceeded with the arrangement of the various objects in the apartments of the Château, but on the very day fixed for the opening of the sale he was compelled, by a decree of the Directory banishing the nobility, to quit France at a very short notice, and the project fell to the ground. On his return to Paris in the following year the Marquis planned another exhibition, of an even more important kind, at the Maison d'Orsay. The collection included the richest furniture and marqueterie produced by Boule, Reissner, and Jacob; superb china; books in most elegant bindings from the libraries of Grolier and De Thou; silks, pictures, bronzes, and sculpture. The success which attended the efforts of the Marquis led to the adoption of his idea by the Government. The first official exhibition was established in the Champ de Mars, where an

edifice was erected surrounded by sixty porticoes, and filled with the most beautiful objects that had been manufactured in France. For the first time the system of deciding on the comparative merits of the various exhibits by juries was adopted, and prizes were awarded.

So satisfactory were the results of this exhibition, that the Government resolved to hold one annually; but, owing to political troubles, it proved impossible to organise another until 1801. On this occasion gold, silver, and bronze medals were awarded. The fourth French Exhibition took place in 1806, and there was not another until 1819; but between that date and 1849 there were no less than six. Their popularity led to the formation of the Société d'Encouragement, which very much aided the industrial efforts of the French manufacturers. It is a curious and remarkable fact that, whilst in France the Society of Arts and Manufactures owes its origin to these public exhibitions of the products of industry, the English are wholly indebted for exhibitions of this kind to their Society of Arts.

Other nations had followed the example of France, but without achieving her success. It must, however, be borne in mind that Paris at that period enjoyed greater facilities of communication with the provinces than most of the other capitals of Europe.

In England, following the example of France, there had been many exhibitions of this description; but the first building devoted expressly to the exhibition of manufactures was the one erected at Birmingham in 1849. It may be worth while, however, to notice the "National Repository" which was opened in 1828 in the Royal Mews at Charing Cross; space was given free, and no objects were to be removed until the close of the Exhibition, when they were to be returned to the owners, unless sold by request.

So far back as 1756–7 the Society of Arts of London offered prizes for specimens of various manufactures, and publicly exhibited the articles thus collected. The artists of Great Britain formed themselves into two societies for the exhibition and sale of works of art. In 1768 the Royal Academy of Painting was established, and since then numerous institutions intended for the benefit of particular arts or branches of industry followed with varying success.

Turning again to the Continent, we find that, although local exhibitions were started in Austria in 1820, it was not until 1835 that the first national exhibition for the whole empire was held in Vienna. Prussia held exhibitions at Berlin in 1822 and 1827. Before the middle of the century exhibitions had been held in almost every large city of Germany, and likewise

in the capitals of Switzerland, Holland, Italy, Russia, Portugal, and Spain.

The idea of an exhibition which should include specimens of the industrial products of various nations was mooted in France in 1849, when Monsieur Tourret, the Minister of Commerce, proposed that France should be the first nation to form an international meeting, and in order to ascertain the opinions of French manufacturers on the subject, he sent circulars to the Chambers of Commerce under his administration. But the proposition was received with so much disapproval that it was at once abandoned. France had passed through a severe political crisis, and would not risk the chance of failure, while French manufacturers dreaded an interchange of industrial ideas and comparisons lest it should weaken the position they held, and lead to a diminution of the protective duties which they enjoyed. Before such a strong opposition, of course, M. Tourret had to give way.

But whatever may have been the previous suggestions, ideas, or proposals for exhibitions of an international character, it is to Prince Albert alone that the noble and disinterested plan is due of arranging and carrying into effect an exhibition for international competition, and it was reserved for England to provide an arena for the display of the industrial triumphs of the civilised world. She stepped forward and offered a hospitable invitation to surrounding nations to bring their choicest products to her capital, there to enter into amicable competition with each other and with herself, and endeavoured to secure them an impartial verdict, with a view to softening those prejudices and animosities by which the happiness of nations had been so greatly retarded, and to promote universal peace by creating international goodwill. It is difficult to exaggerate the praise which is really due to the Prince Consort on this occasion. Indeed, but for his perseverance and knowledge of business matters the great project must have fallen to the ground.

After the French Exhibition of 1844 it was felt that a similar one would be of great advantage in England, but the efforts which were made to obtain the co-operation of the Government were unsuccessful. Renewed efforts proved that no help could be relied upon in that quarter, the Government being unwilling to take upon itself the responsibility of a scheme which was naturally beset with many difficulties.

The popular feeling, however, in favour of such an undertaking was increasing, and the success which attended the experiment may in a great measure be attributed to the freedom of action enjoyed by its projectors. The only help given by

the Government was by providing a site, and by facilitating the correspondence with foreign Powers and the organisation of the police. The building itself was to be only temporary, and the Commissioners were held by a deed of covenant to remove it after the close of the Exhibition; so the "Crystal Palace" was afterwards removed to Sydenham, though Mr. Paxton's idea from the first had been to convert it into a winter garden. All the expenses were defrayed by the executive committee. In 1847 the Council of the Society of Arts formed an exhibition of British manufactures, professedly the first of a series; and, encouraged by its success, repeated the experiment in the ensuing year, when it was announced that an annual competition of the same kind would be held with a view to prepare for an international exhibition in 1851. Prince Albert entirely approved of these proceedings, and took a keen interest in them. His well-considered views and patriotic objects in making this great peace-offering to mankind were, to afford a true test of the point of development at which the whole civilised world has reached, and to make a new starting-point from which all nations would be able to direct their further exertions. No country was in a better position than England to invite the nations to her capital; her industry was flourishing, her manufactures had attained a high degree of perfection, her flag was on every sea, her steamboats and railways were very greatly developed, and she had commercial relations with all parts of the world.

In 1849 His Royal Highness communicated his plans; he proposed that the contributions should consist of four great divisions: raw materials, machinery, manufactures, and sculpture and plastic art generally. £20,000 was the sum proposed for distribution in prizes, and an invitation was addressed to the architects of all nations to take part in a competition of designs for an edifice to be erected in Hyde Park. Many elaborate plans were submitted; indeed, there were no fewer than 233 competitors, one-sixth of them being foreigners. After fifteen protracted sittings the Building Committee arrived at the conclusion that, admirable as many of the drawings were, there was not one so accordant with the peculiar objects in view as to warrant them in recommending it for adoption. They therefore prepared a design of their own, but that also failed to meet with general approval.

For the plan which was ultimately adopted the public is wholly indebted to Mr. Joseph Paxton, the gardener of the Duke of Devonshire. At the time of the great competition, Mr. Paxton was busy with a novel and model garden house, which he was erecting for the Victoria Regia in the gardens of

the Duke of Devonshire, and to that circumstance the "Crystal Palace" may be said to owe its direct origin. Mr. Paxton was a reader of the *Times*, and he followed with sympathising interest its fiercely urged objections against the invasion of Hyde Park by armies of bricklayers and timber-fellers. Every new thunderbolt from the newspapers strengthened the idea in the projector's mind that all that was wanted was a multitude of great lily-houses joined together. The proposed edifice could be constructed at Birmingham, at Dudley, and at Thames Bank, brought home to Hyde Park ready made, and put up like a bedstead. With certain modifications and alterations which were made by several other gentlemen, Mr. Paxton's idea was accepted. At one of the meetings it was suggested that the transept should include some of the large trees of the park; but this presented great difficulties, as it was at first intended that the entire roof should be flat. However, Mr. Paxton conceived the happy idea of raising the semi-cylindrical vault of the transept above the tiers of terraces which extended on either side of it.

The *coup d'œil* of the exterior was very striking, the vaulted roof standing sixty-eight feet from the ground. At the east and west ends considerable spaces were enclosed for the exhibition of objects the weight and dimensions of which precluded their admittance within; among them blocks of marble, stone, slate, coal, and monumental ornaments. At the western end was the fine colossal model of Richard Cœur de Lion by Baron Marochetti.

Few persons who were privileged to visit the great Exhibition of 1851, and who may have seen more perfect ones since, will forget the impression it made upon their minds. It was indeed a brilliant surprise to the world.

Such was the extraordinary excitement at the inauguration that, but for the restriction that season ticket-holders only, who numbered upward of 40,000, should be admitted to the ceremony, the place would have been crowded to excess. The opening ceremony was performed by her Majesty in person, and not only in her regal capacity did she honour the Exhibition, but almost daily spent several hours in visits to the Crystal Palace, evincing great interest in every department. On entering it for the first time the vastness of the building was overpowering, and the hues dazzling. In the transept stood the magnificent glass fountain of Messrs. Osler, which, with its groups of sculpture and tropical plants, occupied nearly the centre of the building, and was visible from every quarter; whilst at the northern end the eye was charmed with the verdure of the forest trees enclosed within the building.

Among the remarkable exhibits, we have only space to mention Powers' statue, the "Greek Slave," and Whipple's photograph of the moon. The art manufactures, objects of utility, and natural productions of various climes were many of them quite new even to educated Englishmen. Above all must be mentioned the costumes of the visitors from different countries almost unknown to the mass of Englishmen. But the chief characteristic of the Exhibition was the spirit in which it was organised. Prince Albert seems to have been prompted solely by the desire to give pleasure and to excite admiration.

England and France were inspired with more cordial feelings towards each other, and the spirit of emulation excited and encouraged the nations to persevere still further in those arts in which they excelled, and to improve those in which they were behind their neighbours. England received her first lesson in art, though her superiority in many branches of industry, especially those most useful to the interests and comforts of mankind, was clearly shown. Foreigners gained commendation at the expense of the British for their skill in the arrangement of colours. In point of elegance of design, harmony of colour, and tasteful arrangement, France, as usual, excelled all other nations. In machinery, on the other hand, England stood alone and unrivalled. These results point to the fact that the great Exhibition was, of all things, the best calculated to advance national taste, and its value was proved by the accelerated progress of arts and manufactures among civilised nations. In England, schools of design were established and workmen trained; and France hastened to improve her manufactories of iron and steel.

With respect to other European countries, and to America, we may say that the effect of international exhibitions upon them has been in proportion to their commerce and manufactures.

It was remarked with surprise by foreigners, and with pride by Englishmen, that England, far from attempting to appropriate the secrets of her invited neighbours, revealed quite openly those of her own industries, machinery, and implements.

The French exhibitors returned from the London Exhibition covered with glory, and with more genial feelings towards other nations; and France determined to hold in her capital also a similar universal competition. Accordingly in 1855 the first great Paris International Exhibition was opened by the Emperor. It brought together an assemblage of objects in the industrial and fine arts such as had been never seen before, and one of its distinguishing features was the collection of works of living artists.

In this branch the French were at home, and determined to supply a contrast to the most regrettable deficiency which had been felt in the London Exhibition. Another new feature was the formation of a gallery where, at low prices, all articles of everyday use might be obtainable. The idea was Mr. Twining's, and it had for its object to unite with the exhibition of articles of luxury those which contributed to the well-being of the many.

Among the remarkable advances made during the interval between the two great Exhibitions were the vast improvement in systems of drainage made by England and Scotland, the definite establishment of photography, and the development of lithography, especially in France, M. Lemercier's establishment having already obtained a European reputation.

In 1862 the second great English International Exhibition was held in London, at South Kensington. The time had now come when some appreciation could be made of the advantages rendered by exhibitions in England. The year 1862 found the population increased and railway management greatly improved; while the Continental managers had learned to appreciate through-booking, return tickets, and excursion traffic at reduced rates, which they could not be induced to entertain a few years earlier. The steam passages between America and Europe had been more than quadrupled, the speed accelerated, and the fares lowered; while, through the people being more fully employed, crime was decreasing, and their social and intellectual position improved. Most important discoveries had been made in the preparation of colours for printing and dyeing. The manufacture of agricultural implements, and especially the application of steam power to them, had been so improved that it had become a highly important branch of trade. Photography had developed into a branch of art and industry, while the electric telegraph and marine telegraphy had become almost universal. Import duties on raw materials were repealed. Great improvements had been effected in art, both in painting and sculpture. The schools of decorative art were beginning to tell, and there was a manifest advance in designs for ornamental manufacture. The increased production of iron was making itself felt all over the world, and, whether for peace or war, the quantity of that metal produced by a country becomes an index of its manufacturing power, and to some extent of its political greatness.

The opening of this second temple of industry was marred by one sad event, the death of the Prince Consort. But the Exhibition served as a memorial to his courage and originality

in having taken trade and commerce by the hand, and pointed out to them the way in which they should go. The first Exhibition had indeed been a school for nations, as its founder had wished; each had then learned its own deficiencies, and in 1862 it was clearly evident that great efforts had been made to remedy these defects.

By this time the spirit of emulation among the French was stirred to its utmost depths, and they determined to imitate England in a second display, and to supplement 1855 more effectually even than England had supplemented 1851.

France did indeed put forth her strength; she rendered the Second Empire illustrious by an outpouring of her genius and energy, and called together the nearest approach to a rally of the nations that had yet been seen. The second French International Exhibition was opened in 1867 in the Champ de Mars, and the building covered no less than thirty-seven acres. All the resources which industry can create for satisfying the requirements of mankind were brought into prominence, and one great feature was the display of actual examples of the styles of domestic and palatial architecture of most countries, including even the tents of some of the nomad tribes.

Austria, with admirable spirit, determined to anticipate her turn to enter the lists of peace. Her capital city was advancing with immense strides in beauty and extent, and she determined that the march of progress should be more than maintained, and that the building, with its annexes, should be an improvement on all its predecessors in extent, in architectural effect, and in solidity of material. The principal entrance, with piers on arches of cut stone, profusely decorated with statues and reliefs, was in highly satisfactory contrast to the fragile shells of glass and cast-iron which sheltered the earlier exhibitions.

The Vienna Exhibition was opened in 1873, its chief object being to collect together examples of every product of human industry and intelligence, and to illustrate them by showing how the producers themselves lived and worked. As a natural consequence of this idea, the most prominent place was given to education and intellectual culture. The whole system of Austrian education was shown even in its minutest details, and exerted an influence of which we are even now feeling the benefits. The building covered about forty acres; financially it was a failure, but this is a matter of small moment when viewed in the light of its subsequent advantages.

The distribution of medals and diplomas at Vienna was lavish; they were awarded to nearly all the nations of the

world, and, as a natural consequence, lost much of their value.

A most appropriate opportunity for pausing a moment and reverting to first principles was approaching for America, namely, the hundredth anniversary of the Declaration of Independence. It was decided to celebrate the occasion by a great National Exhibition, which was opened in Philadelphia in 1876, after five years' preparation.

In reviewing the progress that had been made, it was peculiarly satisfactory to find that greater equality existed among nations as well as among individuals. The better and more universal instruction of children, the simplification of law, sanitary improvements, multiplication of industries, extension of intercommunication, and elevation of popular taste had become common aims throughout Christendom. Small and half-forgotten nations vied with the most powerful, and indications of capacity for art and progress in its cultivation appeared where nothing of the kind was expected.

After the great displays of 1851 and 1862 a feeling began to gain ground in England that, if the activity of manufacturers and designers were constantly directed to fresh effort, universal exhibitions would become unmanageable, and in the opinion of many there were grave disadvantages to be apprehended. For instance, the constantly increasing space necessary for the growing emulation of nations; the lessening interval between the exhibitions; their too short actual duration, and the extra charges put on everything in the town where they were held, without any apparent prospect of again reducing the prices. Experience has not justified these fears; for, after so many exhibitions have been held, they have lost nothing of their vitality, and, far from languishing, the movement continues to grow with ever-increasing vigour.

Notwithstanding the adverse views of the British Commissioners, an International Exhibition on a grand scale was opened at Paris in 1878, by Marshal MacMahon, amid surroundings of the most brilliant character. The Republic had been definitely accepted, and the Government welcomed the idea of an Exhibition as a means of most strongly and satisfactorily emphasising the tendencies and aims to which its efforts were directed. It thus manifested its faith in the institution, and its confidence in the sympathies of foreign Governments. The Exhibition was to mark a fresh flight of France by a revival of activity and energy under a political system possessing her confidence. The special feature of this Exhibition was the large number of provincials who came to it from all parts of France, to show by their presence the confidence

they felt in the Republic. This is, we think, the only International Exhibition which has ever been promoted and supported mainly for political purposes.

In 1880 an International Fisheries Exhibition was held in Berlin, and formed an important link in that chain of exhibitions devoted to special subjects which, as we have already pointed out, have been of so much benefit to the branches of industry which they represented.

The vast and all-embracing exhibitions appeal more to the popular fancy, but those devoted to one special subject are naturally much more complete in their kind, and prove equally attractive to the amateur and the practical man. They have produced a large and valuable literature of their own on every occasion, and, by becoming international, have brought together for comparison the various methods of production or treatment. The tendency of the present age is so strongly towards specialism that it seems highly probable that the international exhibitions of the future, unless promoted to mark some particular event, will become more and more restricted to one subject, or even to one section of a subject.

The most interesting, and perhaps the most artistic national or quasi-international exhibition was held in Buda-Pest in 1885, and was composed of exhibits from every Austro-Hungarian State, including Bohemia, Bosnia, Herzegovina, the Tyrol, &c., &c. It was located in a park of about a hundred acres, through which ran a pretty stream. There were eighty or ninety buildings of various kinds, and pavilions of the different nationalities covered the grounds. The innkeepers of Buda-Pest built a model hotel (for show only), and furnished it from top to bottom with articles of national manufacture, including a banqueting table set out with linen, glass, china, cutlery, &c. A building containing objects of agriculture and the chase was erected of rough-hewn logs of timber; indeed, everything was appropriate, everything artistic; and here, as at the Exhibition of 1851 in England, the costumes of the different nationalities were a leading attraction, whilst within one of the tents were to be seen the interiors of their dwellings and domestic scenes in Austro-Hungarian provinces, in which lifelike figures of plaster were habited in the national costumes.

In France, ever since 1878, there had been a growing national feeling in favour of an International Exhibition to be held in 1889. In the first place, the usual interval of about eleven years which had occurred between successive exhibitions would elapse; and, secondly, that date marked the centenary of a memorable year in the history, not only of France, but of the whole civilised world.

The Champ de Mars was again the site of the building, which was reserved to the arts, sciences, and industries. The Commissioners endeavoured to provide each nation with the means of giving a precise and complete idea of the progress it had made. In 1887 a notification was given to foreign countries inviting their co-operation, but several of the great Powers declined the invitation. The majority of the kingdoms refused to make any advances to the French Republic; perhaps not only from their want of sympathy with that form of government, but also from a disinclination to assist in celebrating the centenary of the Revolution. Evil was prophesied, and many nations felt great alarm. These fears were fortunately not fulfilled. It is true that France did celebrate the anniversary of 1789, but all functions of a political character were quite separate from the Exhibition, which in itself was a brilliant success. The Republican Governments, on the contrary, made an immediate response to the proposals of France, notably Switzerland and America. However regrettable to France the adverse decision of the Cabinets of England, Vienna, Berlin, Rome, and St. Petersburg might be, it was not calculated to destroy the prospects of the Exhibition. Those countries which officially refused to participate were prepared to give every possible assistance of a private character. The French Ministry expressed a desire that in each country which had refused its adhesion a national committee might be formed by the societies for the encouragement of arts and sciences, industry and agriculture, &c.

These efforts were successful; committees were soon formed in nearly every country, and eventually the excessive number of applications was the only difficulty. The great feature of the Exhibition was the Eiffel Tower, in the Champ de Mars. The electric light provided the novelty of opening the Exhibition after dark, and every modern improvement in lighting was to be seen in full activity.

It had been a question as to whether the Exhibition of 1889 was well advised at a time when there was such an industrial crisis, but the French argued that the proper way to overcome such a crisis was by action, and not by abstaining from great undertakings; and that at no time could it be ill-advised to encourage, instruct, and interest the public by raising their enthusiasm with great or fascinating revelations connected with new inventions.

The objection that international exhibitions reveal too openly the secrets of national industry was put aside; for all great manufacturers have agents and travellers who keep their knowledge of new inventions up to date.

The great World's Fair at Chicago in 1893 is too recent for us to form any estimate of its effects. It was modelled on the Paris Exhibition, but was on a much larger scale; indeed, it is not altogether an injustice to say, in the words of a newspaper reporter at the time, it was "nothing if not colossal"! *

In reviewing the history of international exhibitions, we see that they have performed a great work in the past by bringing the nations together, and enabling them to compare each other's methods of work, mechanical appliances, artistic ideals, and scientific progress. And thus the prestige of some has been established, and the spirit of emulation has been aroused in others; while those who have remained indifferent have proved, to their cost, the truth of Humboldt's prediction, that "the States which take no part in the general industrial movement will see their prosperity diminish." Still more have international exhibitions led to the self-knowledge of nations, and to a more just estimate of their own resources. So greatly was this felt, that the suggestion of having a permanent building for exhibitions found considerable favour. But their great value as "flash photographs of civilisation in the run" would be completely lost, and it is certain, from their very nature, that they could not be of a permanent character. It is difficult to forecast the future; but if, owing to the development of coal-mines and machinery, the raw materials are more generally manufactured in the country of their production, and international exhibitions thus become of less industrial importance, yet their general interest will be increased, as each nation, while possessing much in common, will have a still larger number of commercial monopolies for exchange.

Of one thing we may be sure, that with the spread of education there will be an increased interest in good work, wherever it comes from, and a higher and heartier appreciation of international exhibitions, which afford the simplest means of bringing into public notice the results of individual effort acting under the influence of national taste.

* Limitation of space debars us in like manner from noticing the Exhibitions this year (1896) at Budapest and Geneva, with their interesting historical associations.

ESSAY XXI

ON THE RECENT GROWTH OF CITIES AND TOWNS

THE subjects dealt with in this work render it almost unnecessary that anything should be added concerning the effect which is produced on civilised life by the concentration of the inhabitants of different countries in large cities and towns. Under various heads, such as Libraries, Education, Intemperance, Unemployment, and the Condition of Different Sections of the Community, the distinctive features and leading characteristics of great towns have already been treated; but we have thought that a table showing the recent growth of some of the more important cities of the world might be of service, not only to students of to-day, but at a future time, when the sources from which such information is most readily drawn will not be so easily accessible. A very brief reference to the subject, couched in general terms, may therefore not be out of place as an accompaniment to that table.*

In ancient times, and indeed until recently, the metropolis was usually the point at which everything that constituted the greatness of the nations centred, but in our day that statement needs considerable qualification, owing to the decentralisation which accompanies the growth of many countries, and the increasing power of public opinion in what are called the provinces. It would hardly be correct to say that Paris is France; London, England; St. Petersburg, Russia; or Washington the United States, if by that is meant that a visit, however lengthened, to any of these capitals could convey a true picture of the character of the respective nationalities. The national virtues and vices are often more marked and demonstrative, and are, indeed, often exaggerated, in the capital; but there is no doubt that, as a general rule, much that is great and excellent in art, science, and professional life drifts in that direction. Just, however, as there is an increasing division of labour in every department of human intelligence, so, too, there is an increasing tendency to concentrate certain phases of human progress in different

* See Appendix, "Growth of Large Cities."

localities away from the metropolis. No one would think of Paris if the question of French commerce were under consideration; men's minds would at once advert to Marseilles and Havre. Nominally, London is the greatest seaport in the world; but if our own trade were the topic of conversation, Liverpool and Glasgow would at once occur to the speakers, just as New York or Philadelphia, and not Washington, would in the United States. Nor is this merely a geographical matter, for the principle applies also to the national industries. Manchester, Birmingham, and other manufacturing towns rank before London, Lyons before Paris, Elberfeld before Berlin, Chemnitz (for textiles) and Leipzig (for books) before Dresden, Pittsburg before Washington, Bombay before Calcutta, and so on, wherever a great national industry is established. In certain large towns, also, special industries loom more largely than elsewhere: food in Chicago, tobacco in Louisville and Richmond, wine in Bordeaux, shipbuilding in and near Glasgow and Newcastle-on-Tyne; and so, too, the metal, wood, clothing, watchmaking, and many other trades and manufactures have their distinctive seats apart from the metropolis. Nor need we confine our observations to the grosser needs of our race. Oxford would not yield to London as a centre of learning, nor Zürich to Berne. The focus of astronomical knowledge in this country is Greenwich; in Russia, Pulkova; and the same applies, though perhaps not so universally, to centres of learning and intelligence in many other lands.

Again, municipal life, which has been, and will assuredly continue to be, the concomitant of national freedom and development, is not always most conspicuous in the metropolis. Certainly no one would venture to say that it is so in London as compared with Birmingham and some other provincial towns. In Paris municipal life is very active, and has become more so during the last fifteen years with the growth of Republican institutions; and there are other Continental capitals where good government is found side by side with great wealth and intelligence, but the rule is by no means general.* And there is one significant indication of the growing influence of provincial towns which must not be overlooked. The change in the titles of the chief magistrates of such places as Manchester, Liverpool, and Belfast from Mayor to Lord Mayor, although otherwise unimportant, is a striking proof of the claim of such cities to increased consideration as great centres of national life.

But perhaps, after all, more marked evidence of the relation of large towns with the advance of civilisation is to be

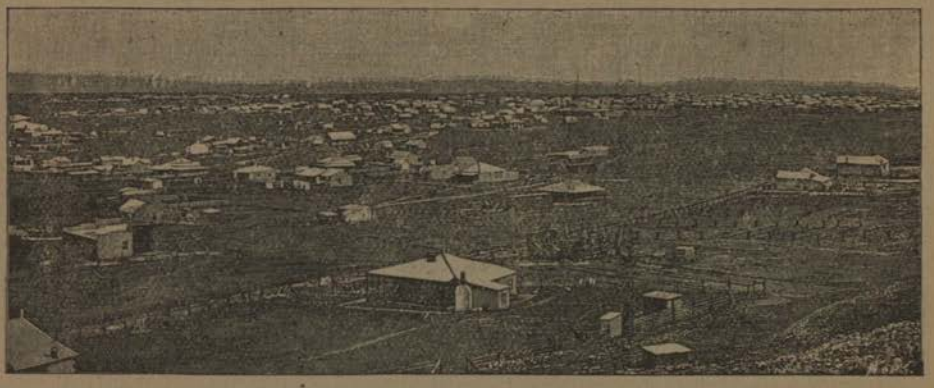
* In this connection, Dr. Albert Shaw's work on "Municipal Government in Continental Europe" (Fisher Unwin) is well worth perusal.

found, not in old-established States, but in new countries and colonies. We do not refer so much to places like Chicago or Brooklyn,* where the city has grown by leaps and bounds, because of its having become the centre of some new manufacturing industry, or from its geographical position, as a place of transit, or as a vent for some overcrowded neighbour, but rather to towns which have sprung up and flourished in the wilderness. In this connection we may point to one which has of late obtained great notoriety, namely, the town of Johannesburg, in the Transvaal Republic. It is only five or six years since Johannesburg consisted of a straggling collection of shanties, with hardly any of the conveniences of civilisation; a large group of temporary wooden structures, called into existence by the discovery of gold in the Witwatersrand. To-day it is a full-blown city, with fine streets and buildings, furnished with commercial exchanges, theatres, recreation-grounds, tramways, telegraphs, telephones, and every other adjunct of civilised life; in fact, it is another example of a provincial town exceeding in importance the centre of government—Pretoria. And, according to the best authorities, this transformation is due to another important factor in modern civilisation, namely, the construction of a railway, under the auspices of Mr. Krüger, the enterprising President of the Republic, which connects it with the sea on the east coast of Africa (see Plates). In the Australasian colonies, too, as well as in the Western States of America, rapid progress is being made by the new-comers in the foundation and extension of towns; and, nearer home, the modernised cities of Bucharest and Sofia may be looked upon as the outcome of the liberation of Roumania and Bulgaria. And finally, in India, where the comparative freedom of the West is taking the place of Oriental despotism, our statesmen are showing their large-minded appreciation of the best means of preparing the natives for liberty by introducing municipal institutions throughout the land. Although it is politic to allow the fullest expression of opinion by the educated natives on all political and social questions, nothing is more likely to benefit the whole country than the transplantation of those institutions which have been the harbingers of our own freedom and self-government.

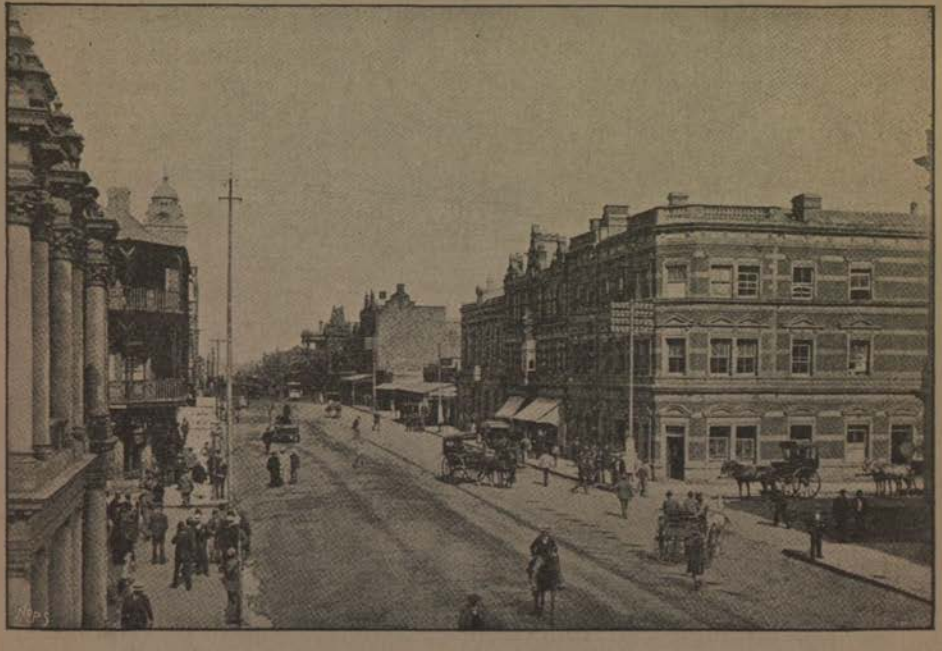
It is an unpleasant reflection, but one that cannot be avoided, that the national vices are more pronounced in large cities than in the country; and whilst Paris, London, Vienna, New York, and Chicago have an unenviable notoriety in this respect, it holds good of nearly all large cities. Associated with vice are to be found penury and crime. Of crime it is unnecessary to say

* See Table.

anything more, and recent investigations have revealed a state of poverty in some of our wealthier centres which is absolutely



JOHANNESBURG IN 1889.



JOHANNESBURG IN 1895.

appalling. It has been estimated by the well-known social statistician, Mr. Charles Booth, that in London, where the condition of about four millions of persons was inquired into,

about 1,300,000 live in a state of poverty, and nearly 100,000 in workhouses and other charitable institutions.* There, and in many other metropolitan cities, the carriages of the noble and wealthy, as they roll along, serve but to reflect the shame of society, which allows its starving multitudes to herd in quarters unfit for human habitation. Neither is the public opinion of the city always as enlightened as it might be expected. "Jingoism," another word for rowdyism, was an invention of the music-hall; the lower, and not always the lower classes are ever ready to run after a new sensation, worthy or unworthy though it be; and that remark applies to many so-called centres of intelligence. The worst horrors of internecine war were perpetrated in polite Paris under the Commune, and the police courts of some of the largest seaports bear witness to the most degraded savagery of which human beings are capable.

On the other hand, it is in the great cities and industrial centres that the lamp of progress and enlightenment burns with the greatest brilliancy. There it is that the resources of civilisation have full play, and the ties which bind the cities of the world together are becoming closer and more and more advantageous. London can already converse orally with Paris as easily as with Manchester; and messages from any of those places may be despatched to Bombay or New Orleans, and answers received in an incredibly short space of time. The great schools of learning are increasing in number and influence, stretching out branches over the length and breadth of the land, and sending down roots deeper and deeper into the social strata. London, Oxford, and Cambridge send their ablest exponents of the arts and sciences into all the provincial towns and even villages, and the emulation of newly established colleges in the provinces is popularising knowledge as never before in the world's history. Large towns are becoming more and more impatient of control by one or two important but distant centres. They are no longer satisfied to carry their judicial appeals to the law courts of the Metropolis, nor to await the periodical visits of judges on circuit. "Home Rule" in various ways is daily becoming a louder cry in large towns, and there is little doubt that in the long-run decentralisation and local self-government will mean a steady improvement in the condition of all classes of society.

As we stated at the commencement of this short essay, our object has not been to institute a full inquiry into the social life of large towns, nor to treat of the special phases

* For the precise figures we must refer the reader to Mr. Charles Booth's works on this subject, which are very instructive, and deserving of study.

of society in all or any of them, as that would necessitate a repetition of what has been said under various heads. But it must be apparent to all who have given the matter general consideration, who have observed the growth and multiplication of cities and towns in the older States, or their foundation and rapid development in newly colonised lands, that although such centres have always held a conspicuous place in the life and history of nations, they are assuming a new aspect, and are playing a much more prominent part in the general advance of modern civilisation.

PART IV

INTELLECTUAL AND RELIGIOUS—CONCLUSION

ESSAY XXII

THE POPULARISATION OF ART

THE glorification of mechanical inventions, characteristic of a certain school of politicians and philosophers dominant in the middle of this century, has given place, by natural reaction, to a disparagement of all such means of progress. We have not really advanced beyond our grandfathers, it is asserted, because we have the electric light in our houses, or because we know what has happened the day before, all over the world. From these extremes of opinion the truer view will emerge, that mechanical inventions, though they do not of themselves civilise, are often of the utmost importance as channels and occasions of civilising progress. No one denies that this is true of the printing-press; and though it is often affirmed that none of the innumerable inventions of this century are comparable to that one, it may well be urged that photography has done, is doing, and will do for pictorial art as much as printing with movable types has done for literature, and may claim, therefore, a rank as a factor of civilisation only second to that of printing, because of the inferior influence exercised by art on mankind as compared with the effect of literature. Literature has necessarily a far wider influence, for the obvious reason that the vast majority of books are not written for their own sake, but as instruments for the communication of ideas or knowledge; whereas pictorial art scarcely serves such purposes at all. Art gains by having, roughly speaking, only one language; but this goes very little way towards redressing the balance.

But what was the condition of Europe with regard to

literature before the middle of the fifteenth century? It was then the exclusive possession, for all practical purposes, of a single class, a luxury in which the people had no share. Without pressing the analogy, we may safely assert that the case was the same with art, in England at any rate, before the invention of photography.

One must never forget the conditions which restrict the painter's fame. Pictures cannot be brought to the spectator; he must go to them. Now, let us take the instance of a painter whose performance and rank can only be appreciated at a certain place, and who is scarcely represented elsewhere. Carpaccio might serve as an instance. Out of Venice it is impossible to realise the importance of this painter. Few indeed are the artists who are adequately represented in more than one or two galleries. Michelangelo must be seen at Rome; Velasquez, at Madrid; Tintoret, at Venice; and minor masters must often be sought in places still more remote.

Here is an immense difficulty in the way of a popular appreciation of the great painters, and till this century an insuperable difficulty. Young men of rank and wealth were accustomed to spend a year or two, before beginning their career, in making the grand tour on the Continent, but for the community at large any such education in art was impossible. There was no National Gallery, and the only means of study in these fields for those without access to private galleries were to be found in more or less costly engravings after certain masters. We shall explain presently how entirely inadequate such means were.

But, it may be said, it is not photography that has changed all this. It is the cheapness and ease of modern travel. No doubt the present generation of the middle classes, both upper and lower, travel to an extent that would have been thought preposterous by their grandfathers. And they become acquainted with some of the most famous modern galleries, and visit cities which an atmosphere, a tradition of beauty makes an illuminative contrast to the daily life of our manufacturing towns. But to hasten through the Louvre, or the Rijks Museum, or the Uffizi, is not of itself enough to have a vital influence on any but minds well prepared. A great picture does not reveal itself at a glance, any more than a great poem at one hasty perusal. It is probable that familiarity with a single gallery like the National Gallery does more towards the education of a Londoner than a dozen trips abroad. The institution of free public galleries, therefore, we consider to be of more importance in this regard than facilities for cheap travel. Yet travel, if not of itself of the greatest value towards this particular end,

becomes so when to it is added what we insist on as the paramount influence—photography. Few people travel without bringing back photographs of the places, buildings, pictures, statues, which they have seen. And the continued familiarity with these reminders of vivid impressions of beauty is an influence impossible to exaggerate.

To illustrate and confirm this pre-eminent importance of photography, we may adduce the fact that the historical criticism of art has been entirely re-created since its development. Now, the older art critics not only travelled, but studied and made notes while visiting foreign galleries. But as they were obliged to trust almost entirely to memory and the general impression made by a picture, it is not astonishing that they made serious mistakes, and the task, especially, of sifting the scholars of a particular master, or of realising the characteristics of the less-known painters, was entirely beyond them. It was not till the student could procure photographs of paintings and drawings of all schools that the comparative study of art could be begun. The modern art criticism, founded by the late Signor Morelli, is based upon such study, and owing to its labours the galleries of Europe have had to reconstitute their catalogues. Numberless false attributions have been exposed; hitherto unknown painters have been brought into light; and the relations of various schools, and of the painters within each, discriminated and made clear.

Photography in its relation to art in the popular mind, is associated principally with portraits and views of places printed by the sun from a negative. It must always be remembered, however, that the experiments of Niepce in the early years of this century had no such end in view. His object was to produce plates which, when engraved by the action of light, could be printed from in a press in the same manner as engravings. What he contemplated, therefore, was a quicker and more accurate method of reproducing pictures or designs. As early as 1824 he succeeded in producing a plate of this kind. The difficulties, however, were very great, and in 1829 Niepce became associated with Daguerre, who continued working out the invention after his death on different lines. It is from the "daguerréotype" that the modern sun-printed photograph has been developed.

The invention of Niepce, therefore, was but one of the series which have been devoted to the work of cheapening and facilitating reproduction of designs. Etching, first used probably in engraving by Albert Dürer, was the earliest of these devices for doing away with the manual toil of the engraver. Aquatint, a variety of etching, was invented by Jean Baptiste le

Prince in 1768 with a view to the reproduction of washes made by the brush. At the beginning of this century came the invention of lithography by Senefelder; and this, from its great superiority in cheapness, very soon attained an immense vogue, showing how widely felt was the want which it endeavoured to satisfy. It was, in fact, from experiments in lithography that Niepce himself went on to develop his idea of photography. And so the succession of discoveries continues—conscious efforts always of men with the same object in view; and if they often availed themselves of lucky accidents, it is foolish to say, as is so frequently said, that such-and-such an invention was due to an accident. Chance only helps those who are alert to profit by her, and unless the experimenter has the conception in his head the "lucky accidents" will occur a hundred times unnoticed.

From Niepce dates the history of the photo-mechanical processes of the present day, with all their innumerable variations. Without going into this history or these variations, which it would fill numbers of pages even briefly to touch on—and the subject is extremely intricate and obscure—we may briefly say that all these processes, to quote Mr. S. R. Koehler, are based "on the properties of certain resinous and glutinous substances, and the changes which they may be made to undergo under the influence of light. These substances are asphaltum, albumen, and gelatine."*

All of these photo-mechanical processes have had one sole object in the minds of their inventors: they made reproductions of drawings or pictures cheaper and quicker. The engraver took weeks, months, even sometimes years, over the production of a single plate. "Process" was intended to abolish the engraver. To a great extent it has done so, and rightly.

Engraving was originally an independent art; that is, the engraver reproduced his own design. Painters, however, soon perceived the advantages of employing engravers to multiply their drawings and diffuse their fame; Raphael, for instance, employed Marcantonio and several other assistants to reproduce his designs under his own direction. Before long the burin was employed to reproduce, not only drawings, but pictures; and at the present day this is by most people conceived to be the only function of engraving.

Conceived in this sense, engraving cannot be compared to

* Those who wish to go further into the methods will find in the Catalogue of the Boston Museum Exhibition of 1892 a clear and succinct account of the photo-mechanical processes by Mr. Koehler, who is one of the first authorities on the subject.

photographic reproduction; it is infinitely more expensive, it consumes infinitely more time, it is far less accurate. Its day is over, and deservedly so. There is nothing to regret in this, from any point of view except that of the engraver. All that is really independent in engraving, all that is really art, will survive; and, in fact, the years which have seen the rich developments of photography have also seen a notable revival of the "painter-engraver," the man who engraves his own original designs on the copper, as did Dürer and Rembrandt.

Engraving, even by the most skilled engravers, can never approach the accuracy of a photographic reproduction. This is a very important point.

Marcantonio was an artist, not a mere craftsman, and with an artist's feeling he had also the craftsman's manual skill in a remarkable degree. His engravings were not made from pictures, but from drawings; the difficulties of transference to the copper were therefore far less great, and the effect to be reproduced, being itself produced by lines, not by washes of colour, was far simpler. Marcantonio's prints are greatly and justly admired; some are, indeed, of extraordinary beauty. But let any one place a Marcantonio engraving beside the Raphael drawing from which it was made—and this is luckily, in certain cases, possible—the British Museum collection affords material for one or two such comparisons—it is astonishing how much has been lost. If, however, a Raphael drawing be placed beside one of the latest photographic reproductions, it will often be found that the difference of the paper is almost the only practical difference between the two. Any one who knows the difficulties of working on metal with the burin, which has to be pushed in the desired direction like a plough, instead of moving freely like a pencil, will not be surprised at this inadequacy of engraving, however skilful.

But the etching-needle does not need to be pushed rigidly and deliberately, like the burin; it can be used with all the freedom and lightness of a pencil. We may expect, therefore, that reproductions by etching will be more close and intimate than reproductions by engraving. Examine, however, the etchings, after Velasquez, by Francisco Goya. Goya was an extremely able etcher, as well as an artist of singular power —the greatest of Spanish artists since Velasquez. Yet these etchings, spirited as they are when seen by themselves, are simply bad as reproductions of the Prado masterpieces, to any one who has the picture fresh in his mind, or who confronts the prints with photographs of the originals. But in Goya's time there were no photographs. Had there been, these etchings could scarcely have been published. Now the public eye has

been so trained, by means of photography, that it is infinitely more critical of inaccuracy. Those who saw a picture now and then in a gallery were easily contented with an engraving that renewed their memory of the general impression it had made on them; but as they could not confront it with any accurate representation of the original, their artistic sense was rather blunted than vivified by familiarity with the engraving. But we, who can buy a photograph of almost any picture or statue in a public gallery, are able to take that photograph home and study it till the picture lives again in our minds; and when once the eye is thus trained it will not tolerate a less complete and perfect translation.

Photography, then, has had a twofold influence, on the artist and on his public. The painter and the draughtsman must be for ever making fresh observations, on which to base the conventions of their art. And as the camera is not only surer than the naked eye, but records what visual impression cannot retain, the store of material is immensely enriched by it. Untrue conventions, therefore, adopted, say, for the folds of a dress, or for gesture, tend more and more to give way to conventions based on the truer observations of the camera. There is, of course, a danger in this added knowledge: the artist is tempted to insert what he knows is there, but what his eye cannot see. There is the same danger in the study of anatomy, but in both cases the advantage is far greater than the danger. Not less great is the profit to artists from the enormously increased facility afforded them by photographs for studying the works of the great masters. Even if a painter has access to a fine gallery, it may very well be that the master for whom he has most affinity, from whom he can learn most, is scarcely represented, perhaps not represented at all. But the magnificent reproductions now issued enable him to study at leisure any master he pleases; and, if not a substitute for the pictures themselves, they are a precious supplement to first-hand knowledge when only one or two originals are available for study.

If we turn now to consider the influence wrought by photography on the general appreciation of art among the public, the extent of it appears almost infinite. It is obvious that whatever gains have enriched the artist through this channel will have, indirectly, an influence on his public. But the direct influence exerted on the public has been quite incalculable.

Before the invention of photography, those who wished to study pictures at home, or to have reminders of them on their walls, had to be content with some form of engraving. We have pointed out some of the disadvantages of engraving con-

sidered as a method of reproducing pictures. From the point of view of the public, it had equal disadvantages. Fine engravings are costly to produce, and therefore costly to buy. And were they within reach of the poorest student's purse, they must still be only for the few, as only a limited number of impressions could be taken from the plate, and when it gave out, the subject was rarely engraved afresh. Yet another limitation must be mentioned. Only a comparatively small number of pictures were engraved. It was not worth a publisher's while to have a picture engraved unless it was a popular favourite. Reproductions of painting, therefore, merely reflected the average taste of the period. At the present day, on the other hand, photographs can be made so cheaply that publishers, while making their profit over reproductions of popular pictures, can afford to benefit students, and serve more various and more original tastes, by reproducing works less familiar or less pleasing to the popular eye. And thus it is possible to encourage, instead of stifling, the demands of the more educated and more exacting minority, a minority which continually grows, and not least by this encouragement.

To illustrate the growth and development of this production we need only allude to the colossal work of Adolphe Braun, of Dornach, who has reproduced in a superb manner thousands of drawings as well as paintings; to the admirable reproductions of the masterpieces of original engraving and etching by Amand-Durand; to the publications of the Autotype Company and the Berlin *Photographische Gesellschaft.* At the present time Franz Hanfstaengl is issuing reproductions of the whole of the Italian pictures in the National Gallery; and the *Klassischer Bilderschatz,* published in Germany and in England, provides the student monthly with twelve admirable reproductions of various pictures for a shilling.

Every year sees new progress, new expansion; doubtless the present generation will be able to possess photographs, practically, of every picture in every gallery in Europe. What might be an even more potent, because more universal channel of knowledge, is the illustrated book. Here, indeed, the last thirty years have wrought a revolution, again by means of photography. The demand for good illustrations is very great, and the supply abundant. Still, it is impossible to regard ordinary book illustrations as of the same importance as reproductions of the great pictures of the world, although, of course, the latter are often required in books. But the desire for pictorial adornment and for decoration in books is significant, as is also the rapid development of the "picture-poster." It seems as if before very long no tradesman would venture to advertise his

wares abroad without calling in an artist to design him an advertisement. The second great factor in the popularisation of art in our times is the growth of free national and municipal museums and galleries; and, arising chiefly out of these, the organisation of temporary loan exhibitions for the general benefit.

The present generation is apt to take an institution like the National Gallery as a matter of course. Yet it is only of recent years that the Gallery has become one of great importance, although the private collections in England are more numerous and rich, probably, than those of any other country Up to the beginning of this century art was considered solely as a luxury for the few, and only by degrees did the democratic conception of art, as a national glory and possession for all to share in, win its way to recognition. The National Gallery was not founded till 1824; the Art Galleries of Birmingham, Liverpool, Manchester, Glasgow, and other towns are of more recent origin. The thousands who frequent these institutions every year—and over half a million visit the National Gallery—number very many of the poor.

No doubt there are multitudes on whom such treasures have little or no kindling effect. That is not the point: the point is, that every one, however poor, should have the chance of satisfying thus whatever instinct towards beauty he possesses. The masses are only affected through individuals; and to reach the chosen spirits, "fit though few," is all that is needed. One hindrance to this end which has hitherto existed in England is the closing of museums and galleries on Sundays—the one day in the week when working men can best profit by them. The resolution just passed,* however, in the House of Commons will at last remove this hindrance.

A concrete instance is more convincing than any number of generalisations. Few men have had more influence on the art of this century than Keats. Every one knows what Keats' social position and bringing-up were: they were of a kind rather to limit and stifle than to expand his genius. The ideal of beauty was colourless and unreal, the desire for beauty rare. It was a happy chance, therefore, that brought to England, just at the budding-time of Keats' gift, those priceless fragments of the most perfect art ever known, the Elgin Marbles. These were to be seen at the British Museum; he could see them every day. And what those sculptures did for Keats we know from what he says himself; still more from his "Hyperion," where the types are borrowed from the beautiful Greek marbles, and the poet's style has acquired, through this converse with

* March 1896.

their serene magnificence, a dignity and greatness which it would otherwise have missed.

This is a single but suggestive instance of the power which museums, stored with the masterpieces of the past, may have in shaping and enkindling natures ripe for their inspiration. Of late years, also, there has sprung up a movement for the holding of temporary exhibitions in the poorer parts of London and other great towns, and the movement is increasing in importance. All these several influences, then, are at work towards the making of art a real factor in the general life of the nation. But for the most part these are seeds sown at random, and the ground is often prepared. How are these influences to be directed, intensified? They must be made a part of education.

Educationalists seem little to have realised the extraordinary force of pictorial art upon children. An experiment made a year or two since in California proved this in an interesting way, though if any one question his own memory he will surely not be in need of proof. A number of boys and girls were examined as to their conceptions of the Deity, the unseen world, heaven, &c.; and in nearly all cases where the starting-point of the idea was traceable, it was found to have been suggested by a picture of some kind, advertisements in shops or newspapers even, but at any rate something pictorial. But every one knows how strong and ineradicable are the associations made by early youth between ideas conceived and things seen or portrayed. Often it happens that these associations are grotesque, simply because the young imagination is not provided with fit material. How infinitely important, then, to supply the impressionable, vivid sensations of childhood with images that expanding reason will not need to discard! Pictures here serve a use in giving a fit and beautiful embodiment to ideal conceptions, as well as being, by the sheer influence of beauty, an illumination and delight to those who live where sordid and ugly things abound.

In 1883 was founded the Art for Schools Association, which aims at meeting this want in education. This society's experience and continually increasing activity are sufficient to show how widely the want is felt. Before its institution teachers had only maps and physiological diagrams with which to adorn their walls. Now they can procure from this association excellent reproductions of pictures at very low prices. Here again one may note how indispensable is photography to the work of diffusing art. One Board School master in Limehouse has under him three or four hundred boys, we believe, who reproduce in metal designs published by the association, and often invent designs themselves.

A younger society is the Fitzroy Picture Society, which does work of the same kind.

Sceptics pretend that art is only appreciated by the cultivated, but this is an unsupported theory. If one examines the lives of the great artists, it is astonishing how many are found to have come from quite humble ranks; we should not be wrong in saying the great majority. Not that this is the slightest disparagement of their glory; but it seems probable that cultivation of the mind through books, quicker apprehension of facts or of logically expressed ideas, is rather a hindrance than a help to appreciation of pictorially expressed ideas—to cultivation through the eye. Moreover, pictorial art is an earlier mode of expression than writing; and as science tells us that the history of the race is repeated in the individual, we should naturally expect that children would be more sensitive to the former mode of expression, which experience also confirms; and therefore this should be the first influence in the education of the young.

At present we are only on the threshold of the real popularisation of art. We have laid stress on the extraordinary importance of photography, as an invention, but it must not be forgotten that, as we have said, it was the result of deliberate experiments; and throughout this century the ever-increasing excellence of all kinds of reproduction is as much the answer of a want, deeply and widely felt, as the foundation of free museums and the holding of loan exhibitions. After two hundred years, the prison of Puritanism begins to crumble; there is a universal feeling of expansion in England, influenced doubtless immensely by the expansion of our race over the world; and the desire for beauty, so impassioned in that earlier time when discovery was daily enlarging the world's horizons, is manifested anew. As we suggested, the time may come when this age will seem as important for art as was the fifteenth century, with its printing-press, for literature.

EDITORIAL NOTE.—In this essay the popularisation of art has been treated in one of its phases only, but the effect of that popularisation on the public taste is equally, if not more striking, through the multiplication of objects of art and utility. The works of Wedgewood, Doulton, and others; the artistic productions of the Black Forest, Switzerland, France, and other European countries, as well as of the Far East, have exercised a potent educating influence. They are found everywhere, in the cottage as in the palace, and wherever they penetrate their civilising influence is inestimable.

ESSAY XXIII

OUR KNOWLEDGE OF THE UNIVERSE

ALL the knowledge which Man has been able to obtain respecting the material universe, beyond the globe forming his dwelling-place, and the surrounding gaseous envelope, which, indeed, may be considered an integral part of it, is ranked under the head of astronomy, the most ancient and sublime of all the sciences. The nature of that knowledge has undergone a wonderful development within the last hundred, and especially within the last fifty years, a development rich in its testimony to the activity of the human mind, and important in its effects upon it. The most striking result of this advance, the one which dominates and crowns all others, is the growth of the conception of the unity of the visible universe. When the last century was drawing to a close, no ordinary observer of the celestial motions, no astronomer, save perhaps one or two, appears to have dreamed that there was aught to be seen or learned beside the apparent relative positions of the stars and heavenly bodies on the celestial vault, and the deductions therefrom of the motions of the earth and her sister planets. The popular mind still judged the stars to be lamps set for the service of mankind in the vault of night; the observer, indeed, recognised that a few bright stars had proper motions, but proceeded not a step along any of the many avenues of knowledge that were thus opened. The mathematical and mechanical treatment of the structure of the solar system had alone attained a high state of development.

One hundred years ago, therefore, though the movements of the planets round the sun, in obedience to the grand law of gravitation, were thoroughly understood, and though, in consequence of the transits of Venus of 1761 and 1769, and of Henry Cavendish's earth-weighing, the distances, diameters, and masses of the sun, and therefore of the planets, were known with a considerable approach to accuracy, this was almost the limit of astronomical attainment. Even the great father of modern astronomy himself, Sir William Herschel, had so little

conception of the actual constitution of the sun as to imagine it a body habitable by beings like ourselves; conceiving that the heat might be limited to an upper fiery atmosphere, which a cloud-screen might temper to an agreeable warmth for the inhabitants of the great solid globe, which he imagined as existing far within the glowing orb seen by us.

Naturally astronomers were not so far astray as to the constitution and condition of the planets. They were generally believed to be habitable worlds like our own, and the waxing and waning of the white polar caps of Mars, in complete synchronism with its astronomical seasons, received the natural interpretation which is still generally current to-day, that these showed the formation and melting of ice and snow on the hemisphere in winter. No just account was, however, taken of the great differences in the amount of light and heat received by the different planets, none of their great diversity in density and surface gravity, and therefore of atmospheric distribution and pressure; whilst the more numerous moons of those more distant were popularly supposed to make up in no inconsiderable degree for the enfeeblement, through greater remoteness, of the influence of the sun.

Comets and meteors, the other two classes of members of our solar system, were even less understood. Halley had, indeed, shown that one of the former was as thoroughly a member of the system as Saturn or Jupiter, but the astronomical relations of meteors were wholly unsuspected.

In the world of stars it had already been noted that some had a perceptible motion relative to the others, and Prevost and the elder Herschel were beginning, at the epoch referred to, to show that a portion at least of these "proper motions" must be assigned to the onward movement through space of the sun, with all his attendant planets. The variation in brightness of some stars had also been remarked. Two of these in particular, *Mira*, in the *Whale*, and *Algol*, had attracted attention, and these two stand to-day as exemplars of the two great divisions of variables and of the two chief causes of variation—*Mira* of changes in the star itself, *Algol* of obscuration caused by the recurrence of an eclipse. But however probable the eclipse theory may have seemed one hundred years ago, it was until recently beyond the power of astronomers to demonstrate it.

Of the constitution of the stars nothing was known; it was simply guessed vaguely that they were "suns," without any appreciation of what that term involved. The problem of their distances was beyond the instrumental power of the astronomers of the time to attack with success; nor can we

claim to-day more than that we have begun upon its solution. But the one great master-mind of the age, Sir William Herschel, had at least formulated the problem and devised means for a first rough approximation to it, and at the beginning of the present century was busily engaged on those star-gaugings which gave us our first ideas of general stellar distribution. He assumed as a first working hypothesis, when great numbers of stars are being dealt with, that they are, *on the average*, at equal distances apart. Later he assumed that they are, *on the average*, of equal actual brightness. Both assumptions proved to be incorrect, but the work done in accordance with them gave us the first definite idea of stellar distances—an enormously exaggerated one, as later work has shown.

A third method, his first in order of date, was directly fruitful, but not for the end for which he had designed it. A century ago the operation of the law of gravitation had only been observed by us within the limits of our own system. But early in the present century (1803) Herschel had proved that, in the case of certain double stars, the fainter was in revolution round the brighter. He had measured the relative positions of a number of unequal pairs in the expectation that the fainter star was immeasurably more distant than the brighter, and that he might thus indirectly measure the parallax of the latter; *i.e.*, its apparent displacement due to the earth's motion in her orbit, and so determine its distance. He failed in this, but his failure was the foundation of the extensive department of double-star astronomy.

Nebulæ and star-clusters were considered to be essentially the same previous to Sir W. Herschel; and even he, until 1791, judged all nebulæ to be composed of genuine stars, and their resolvability simply to depend on a proportionate increase of the light-gathering and of the separating power of the telescope. At first even he fell into the popular error of regarding them as "island-universes;" and he told Miss Burney that, with his large 20-foot reflector, he had discovered 1500 "whole sidereal universes, some of which might well outvie our Milky Way in grandeur." The discovery of a faintly luminous halo round a star in Taurus at last made it evident to him that a nebula might be of a gaseous origin, and in accepting this theory he was nearly three-quarters of a century in advance of the generality of astronomers.

It will be noted, in reading the foregoing brief outline of the state of astronomy at the close of the eighteenth century, that one name—that of Sir W. Herschel—occurs again and again. This is inevitable, for no other man did so much to start the methods of the new astronomy as he did, and there

is scarcely one of all its numerous departments which he was not the first, or almost the first, to open up, and in which he did not work most skilfully and successfully as a pioneer.

Astronomy as it was, therefore, is astronomy before Herschel. Astronomy as it is, is largely the tree of his planting. Let us now look at the record which it presents to us to-day.

The application of the spectroscope to astronomy has enabled us to gain a knowledge of the constitution of the heavenly bodies far more detailed and exact than our forefathers could have deemed possible. It has shown us in the sun, for example, hydrogen, sodium, magnesium, iron, and many other elements thoroughly familiar to us here. It has done more. In one instance at least, that of helium, it has revealed a new element to us—first, in the sun, and, much later, as a minute constituent of a few rare terrestrial minerals.

The same elements exist in the sun as on the earth, but not in the same state. The spectroscope has demonstrated this also for us, and we recognise that the intensity of the solar heat is so great that elements as refractory as iron, solid here, are there continually in a state of glowing gas. It has shown us that the same elements exist in the sun as on the earth. But it has not shown us all that we know here. Oxygen and nitrogen, the gases of our own atmosphere, are not those which we recognise around the sun, but hydrogen, found here practically only in a state of combination, and helium, hardly to be found here at all.

It appears clear that the bright surface of the sun is made up of what we may describe as clouds; not the cool, sheltering clouds of Herschel's imagining, but the condensation of the intensely heated gases rising from the interior. These become cooled partly by expansion, and partly by radiation as they reach the surface. And it would seem probable that at the high temperature of the sun only elements so extremely refractory as carbon and silicon are capable of even this amount of condensation. Above and around these clouds of dazzling whiteness, the "photosphere," are gases of metals for which the temperature is too high to allow their condensation; these, absorbing a certain portion of the white light of the photosphere, give rise to the dark lines of the spectrum, and have been somewhat incorrectly termed the "reversing layer."

Sun-spots and faculæ have been known since the invention of the telescope, and the rotation period of the sun, and the position and inclination of its axis, had been early determined from their observation. But it was reserved for Schwabe in the present century to show that these varied in a cycle of an average length of about eleven years; for Carrington to fix the

position of the poles with precision, and to prove that spots near the solar equator moved more rapidly than those in higher latitudes; for Spörer to point out that spots were found huddled near the equator at the close of one spot-cycle, and remote from it at the commencement of the next.

The nature of sun-spots still remains much of a problem, and their connection with the magnetism of our own globe is a yet greater mystery; though the fact of a distinct connection within certain limits is now established beyond challenge. But the nature of certain appendages to the sun first revealed to us in total solar eclipses, but now brought within the reach of daily study by the spectroscope, is better understood. Above the whitely glowing surface, known as the "photosphere," we find a region some 3000 miles in height, of which hydrogen and helium are the principal constituents, but in the lower portions of which many of the lighter metals are found from time to time. From this shell of heated gas, the "chromosphere," rise the "prominences," or "protuberances," of two great classes, the hydrogen prominences, composed mostly of hydrogen and helium, and the "metallic eruptions," usually closely connected with sun-spots, in which, as their name implies, the metals are largely represented. The rates of motion of the gases in the prominences, both upward from the sun and parallel to its surface, have been studied, and, with the changes witnessed in the spots, evidence a tremendous violence of action, a violence in full accord with what we know of solar energy.

This has been measured in many ways. The effective temperature of the solar surface is stated as not far from 8000° C.; the total heat radiated in a second of time is put as equal to that produced by the combustion of 12,000 millions of millions of tons of coal; its total light as equivalent to that which would be given by 400 billions of billions of standard gas-lights—measurements which can be computed by those who are accustomed to astronomical calculations, but of which the popular mind can form no conception.

The momentous question as to how this enormous radiation is kept up has not yet been completely answered. The old idea of combustion is evidently wholly at fault. The idea that the impact of meteors may supply the necessary source of energy is also insufficient. The theory that the slow contraction of the sun gives the true explanation is at present considered the one with most reason to support it, but from the nature of the case is incapable of full proof from observation.

Around the sun we find the corona, largely made up, no doubt, of minute particles of cosmical dust, and varying in its shape with the sun-spot cycle.

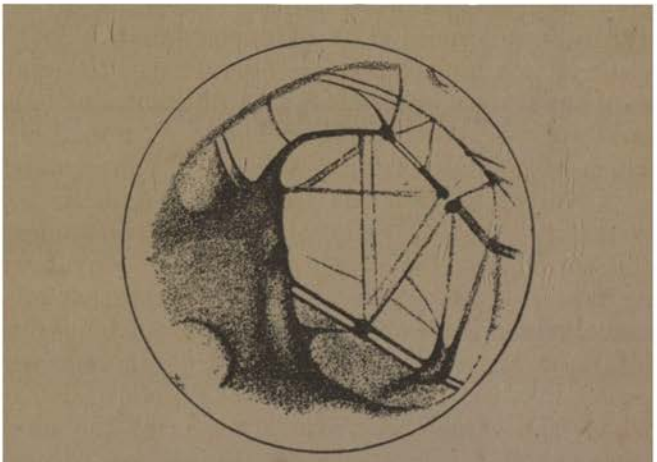
Turning from the sun to the planets, the improvement of telescopes has greatly increased our knowledge of the surface-markings of Mars, Jupiter, Saturn, and the moon; has added to the list of satellites, two of Mars, one of Jupiter, one of Saturn, four of Uranus, and one of Neptune. Similarly, and by the aid of photography, more than four hundred "pocket-planets" have been discovered between the orbits of Mars and Jupiter.

The advance in our knowledge of the planets has not been to favour the idea that they are the homes of beings like ourselves. Mercury turns the same face continually towards the sun, and hence is burnt on the one side with unintermittent heat, whilst the other remains in continual darkness, exposed to unchanging cold. The moon, every part of the visible hemisphere of which has been most carefully surveyed, evidently now possesses no appreciable atmosphere or moisture, and the temperature of its soil does not rise about freezing-point even under the direct rays of the sun. The four hundred or more minor planets are evidently unfitted for human residence by their minute size. The four outer planets receive far too small a portion of the sun's light and heat, and appear to be still in a vaporous condition, not sufficiently condensed as yet for habitation. The spectroscope gives clear evidence that two outer planets at least have atmospheres differing strikingly from ours, and suggests that they emit some light of their own. The comparatively large amount of light received from them points in the same direction, as does also their density.

Mars and Venus alone appear as possible replicas of our earth. Of Venus we can learn but little, its atmosphere being too cloud-laden for much really trustworthy information to be obtained respecting its condition, and its rotation period is not yet decided with certainty; some observers giving it a value of, practically, twenty-four hours, like the earth and Mars; others, amongst whom we have to count Schiaparelli and some of the best Continental observers, making it equal to the revolution period of two hundred and twenty-five days. In this latter case Venus, equally with Mercury, must have one hemisphere in perpetual darkness and cold, whilst the other is exposed continually to the full heat of the sun.

Mars alone, of all the members of the solar system beside our own earth, presents some evidence pointing to its habitability by sentient and intelligent beings, and this evidence has only just been placed before us. Up to quite recently the verdict must have gone the other way. The small amount of light and heat received by the planet, less than one-half, surface for surface, of what we receive here; its exiguous atmosphere,

with a pressure at "sea-level," if there be seas in Mars, lower than at the greatest height to which balloon has ascended from the earth; the astonishing changes in the boundaries of what were regarded as "sea" and "land," all seemed to forbid the idea of habitation. This is now changed, and the great cosmical principle of unity of plan, diversity of detail, has received a further and most striking illustration. Our knowledge of the "warrior planet"—not unjustly so entitled, for if the latest theory be correct, the dwellers upon it have to wage a most persistent warfare for their existence—has increased mightily during the last twenty years. The increase in telescopic power has done much; the dogged persistency with which Schiaparelli continued his study of the planet long after all other observers



THE CANALS OF MARS. AFTER SCHIAPARELLI.

had left off, and after the apparently most favourable opportunity had passed, did much more; the choice of high mountain stations as sites for observation has enabled Lowell and Pickering to complete the work. And we have now a body of evidence from direct observation which may, with much plausibility, be taken to show that Mars is now, or has but recently been, the home of beings, unlike ourselves no doubt in many things, but like ourselves—nay, outstripping ourselves, in engineering skill, in power of combination, in mastery of the mechanical arts, and intelligence in applying them.

Briefly, theory and observation alike point to Mars as an "older" world than the earth, a world which possesses, as a consequence, much less water and a thinner atmosphere than ours does. It has, so it is urged, practically no seas or oceans, except round the poles. Each polar sea in its turn, when the return of spring melts the winter's ice and swells the sea to

overflowing, is made by the dwellers on Mars to fill a vast network of irrigation canals which cover the whole body of the planet. Bizarre as the theory appears at first sight to be —bizarre as is the appearance of Mars when the "canal" system is in full development—later observation has triumphantly vindicated Schiaparelli's discovery of the "canals," and has removed some of the chief objections to the theory. It certainly has not yet been demonstrated, but it is, on the other hand, impossible to scout it as absurd. Should further research confirm it, then we shall have what, considering the vastness of planetary distance, is more than we could have possibly dreamed of—direct evidence from actual observation of the handiwork of intelligent beings on another world, possibly of beings who have already passed away, for Mars is a world in an advanced state of development. But even so, we may see in it a hint of possible future races to inhabit other members of our system, when their time of full maturity has come.

It would appear from the researches of Professor G. Darwin on the effect of tidal friction, that, even if Venus and Mercury have not already adopted this relation towards the sun, they must eventually do so. We learn this from the analogy of the moon and the earth; for, as we know, the moon always turns the same face towards us, completing its rotation on its axis and its revolution in its orbit in the same mean period. This relation is not an accidental one, nor is it one which has always existed. It is the result of the long-continued retarding action which the earth had on the rotation of the moon, when the latter was sufficiently plastic for its primary to set up tides within it. Similarly, though more slowly, the moon is checking the speed of the earth's rotation through the tidal drag, a drag which has the reflex action of lengthening not only the terrestrial day, but also the lunar month, by causing the moon to recede from the earth. Looking backward, therefore, this investigation indicates that the moon, in the far-distant past, once revolved in practical contact with the earth and in a period under three hours, then the length of the earth's diurnal rotation. It is further inferred that it occupied this position in consequence of the disruption of the earth, for a rotation period of two hours and twenty minutes was incompatible with the latter retaining its cohesion; the moon, therefore, was probably broken off from its parent orb. Looking forward, the investigation presages a lengthening of both lunar month and terrestrial day till both attain the same value, some 1400 hours, and both bodies in consequence continually present the same face to each other. Later still the solar tide will force the earth to follow the example of the inner planets, and, like

Mercury and Venus, to move with one hemisphere perpetually turned toward the sun.

The discovery of the numerous "minor" planets has added greatly to the number of the known members of the system, but does not call otherwise for much notice in the present sketch. The discovery of Neptune was an achievement of quite another order, and still stands as the most signal example of the triumphant application of the law of gravitation to the prediction of the unknown, through the means of mathematical analysis. A less striking, but still extremely interesting, example of the powers of research thus given us is shown in the demonstration by Clerk Maxwell, that the rings of Saturn are composed of a vast number of discrete bodies revolving round Saturn in distinct orbits, but by their numbers and by their nearness to each other giving rise to the appearance of a solid ring. The spectroscope has quite recently given an independent proof of this meteoric constitution of the rings by showing that the inner parts of the ring revolve with a greater actual velocity than the outer, as they must do in moving in independent orbits; whilst the reverse would be the case if the ring rotated as a single solid body.

The world of comets has opened up a wide field. Many are now known to travel in closed paths round the sun; some—Encke's, for example—so far as the frequency of their return and the exactness with which their motions are followed, may be deemed as quite planetary; the elements of one or two, indeed, do not differ in character very much from those of some of the minor planets.

The spectroscope has shown that, beside shining by reflected light, comets have generally a light of their own. Their spectra show usually the curious and characteristic bands of hydrocarbon; but when approaching very close to the sun, the lines of sodium become conspicuous, and, in the case of an extremely close approach, those of iron are seen as well. Here again we are taught to recognise, in the composition of these weird wanderers, the very same elements as we find in our own globe.

The phenomena of comets' tails have been followed with great attention, and for the most part are explicable on the assumption of some repulsive action, probably electrical, exerted by the sun on matter in an extremely fine state of division. The volatilisation of the less refractory portions of the comet as it approaches the sun, and becomes exposed to an intenser heat, probably brings about the necessary condition for the driving off of a tail. The rapidity with which this takes place depends upon the density of the particles, the lightest being driven the fastest, and hence forming the straightest tail.

Meteoric astronomy has made great advances. Meteors are no longer regarded as mere chance and lawless intruders into our atmosphere, but their motions have been carefully watched, and the points from which they seem to radiate have been observed. Many hundreds of radiants have been determined, and many of these contribute their quota of meteors every year. Some are of exceptional interest, since the orbits in which the meteors move, which form the shower, have been traced, and been found to coincide with those of well-known comets. The spectra of meteors in general have not given us much information. The examination, however, of meteorites which have actually reached the ground (the only objects from without our world which have come within our touch) has confirmed the lesson the spectroscope has taught elsewhere, of the essential oneness of the chemical constitution of the universe.

It is, perhaps, in the sidereal universe beyond the limits of the solar system that the most remarkable advances have been made. Here again the spectroscope has been the chief means of progress, revealing to us the same elements, but not usually in the same proportions, as in the sun. But the bright continuous spectrum crossed by dark lines is more than an indication of the presence of these elements; it shows the stars to resemble the sun in structure as well as in constitution. They too have their photospheres and their "reversing layers," and occasionally we receive hints of chromospheres, prominences, and even of coronæ.

So far the lesson is one of resemblance; a not less important one is that of the differences between star and star. For stellar spectra are of several different kinds, some resembling that of the sun, but more differing widely from it.

There is a rough correspondence between the colours of the stars and their spectra, and the very broadest division may be taken as being that into the white or bluish stars; the yellow stars, of which the sun is one; the orange stars, mostly variable; and the red stars, where the carbon spectrum of the comets is seen again, but as dark, not as bright bands. A fifth class, to which but a few faint stars belong, is yet, as will be shown later, of great importance from a theoretical point of view.

Next to the constitution of the stars come the questions of their distances and distribution. The direct method of determining stellar distance, by the measurement of absolute or relative parallax, unfruitful even in Herschel's hands, has yielded a small number of satisfactory results, and we now know the distances of some thirty or forty stars with some approach to accuracy. Here the heliometer, as the telescope with divided object-glass is inappropriately called, has been of great

assistance. The star of minimum distance appears to be α, Centauri, some twenty-five billions of miles removed from us, whilst the average star of the first magnitude is nearly nine times farther away. So, though for the great mass of stars we have no direct determination of their distances, yet we stand in a very different position to that held one hundred years ago. Stellar distance is not an expression of unmeaning vagueness; in some cases we know it definitely; in others we know the order of its magnitude.

Closely associated with the question of distance is that of proper motion. Herschel's idea, that on the average the brightness of a star was an indication of its distance, had proved misleading, but a rapid proper motion has been a surer indication of nearness, and several small stars, which upon examination have given large parallaxes, have been pointed out as probable neighbours by the swiftness of their motions. This criterion would, however, evidently fail to show the proximity of stars, should there be any such, that partake in the same drift as our sun.

Increasing knowledge of stellar proper motions has led to an improvement in the determination of the direction of the sun's path in space made long ago by Herschel, but has not affected its character; the spectroscope has, however, introduced an entirely new factor. By its means the motions of the stars in the direct line towards or from us can be measured, thus supplementing the information we obtain by the telescope of their movements on the apparent vault of heaven. The problem of "the sun's way" has thus received an entirely new solution, and one which contains a term indefinable by the older method, which did not provide any sufficient means for determining the speed with which the sun travels. As yet an insufficient number of stars have been observed by this method to improve upon the observation of the sun's direction obtained from proper motions, but its speed has been fixed as about ten miles per second.

The great problem of the general structure of the heavens has owed comparatively little to the improvement of modern instruments, progress in its solution being due more to the gradual maturing of its consideration in many minds. Steadily the idea has made progress, to which Michell had drawn attention even before Herschel's star-gaugings, that the apparent groupings of the stars represent real aggregations. The one great group that has received consideration beyond all others is the mysterious band of stars which encircles the entire heavens called the Milky Way.

It did not escape Herschel that nebulæ bore a remarkable

relation to the Milky Way. Whilst star-clusters were specially numerous within its limits, and whilst a distinctive class of small nebulæ, the planetary nebulæ, especially affected it, nebulæ in general avoided it. Not only so, but what might be called the northern pole of the Milky Way is a region most especially rich in nebulæ, and to a certain extent the same is true of its southern pole also.

This one fact alone, as Herbert Spencer pointed out, was sufficient to disprove the old idea that nebulæ were "island-universes," vast sidereal systems, like our own Milky Way, and nebulous only through their almost infinite distance. It showed that the nebulæ form parts of one and the same structure as the Milky Way, and that they are, on the average, at the same general distance from us.

An ever-increasing number of facts point in the same direction. The turning of the spectroscope on a nebula in 1864 gave Dr. Huggins, not the continuous spectrum, which a star-cluster, however distant, would have given, but two or three isolated bright lines. Here was no photosphere glowing with white light, no "reversing layer" of absorbing gases; there was the evidence of the presence of glowing gases, and of them only. Clearly we had not to do with "island-universes" in nebulæ like these.

The different types of stellar constitution revealed by the spectroscope furnish evidence in the same direction. The Milky Way is not only the home of planetary and irregular nebulæ, it is especially a congregation of stars of the "first type." More than that, the "fifth type" of stars are exclusively found within its borders, and all but entirely upon its very spine and axis.

Again, careful star-gaugings, after the manner of Herschel, show that the main features of the Galaxy are given by stars of the ninth magnitude, and by those far fainter. In other words, so far from magnitude proving a rough indication of distance within the Milky Way, stars of very different actual brightness are in comparatively close proximity to each other. This lesson had also been taught by the cluster of the Pleiades, a cluster itself having an intimate relation to the general celestial edifice of which the Galaxy forms the main body.

Double-star astronomy has become in the course of the century a department of great importance, the number of stars known to be in physical connection with each other rapidly increasing. Apart from thus affording us examples of the operation of the law of gravitation in "the great beyond," these instances have often a further interest for us from the side-light which they cast on the past history and evolution of

solar and stellar systems. The high eccentricity of most stellar orbits is at least suggestive of an evolution by tidal friction, analogous to that by which the moon seems to have been separated from the earth, and this has been confirmed by the demonstration, by means of the spectroscope, that Algol owes its variation to a partial eclipse by a dark satellite at no great distance from it. In one variable of the Algol type the companion is almost in contact with its primary. The spectroscope has also shown the existence of double stars far too close to each other to be observed as separate bodies; and in one way or another we have now evidence of stellar systems in which the dependent body revolves round its primary in a period which varies in different cases from a very few hours up to hundreds of years. The completeness of the sequence thus afforded is certainly in favour of a wide operation of the tidal method of the formation of stellar systems.

Herschel, from a study of the forms of nebulæ, had come to a strong conclusion as to the course of nebular development. Laplace, from a consideration of the relations of the planets of the solar system, their adherence to nearly the same plane of revolution, their motion in the same direction, and other characteristics, had arrived at a very similar nebular theory. At the present time no given form of the nebular theory holds its ground. That, in some mode or another, the solar and various stellar systems have been the result of slow and long-continued evolution cannot be doubted; that nebulæ too undergo life-change, whether precedent to the formation of stellar systems or not, is equally clear, but the methods in either case are still to seek.

Astronomical photography has rather presented the problem to us in new and more interesting phases, than helped us to a solution. In many regions in and near the Milky Way it has shown us vast filmy stretches of nebulous matter, linking groups of stars together, embracing them in far-extended coils; whilst in other instances, notably in Dr. Roberts' famous photograph of the great Andromeda nebula, a previously apparently inchoate mass has been revealed as crystallising out, if the term may be allowed, into a stupendous ring-system, ring within ring; the innermost encircling a spherical nucleus (see Plate).

Another link between nebulæ and stars is afforded by the strange and perplexing phenomena of "new" or "temporary" stars. Only five of these have been witnessed since the application of the spectroscope to astronomy, and none of these has at all approached the brilliance of some of the same order observed in earlier times, but their record has been of interest

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THE GREAT NEBULA IN ANDROMEDA

FROM A PHOTOGRAPH BY Dr ISAAC ROBERT L.L.D. F.R.S.

in more ways than one. They have shown, besides the continuous spectrum crossed by dark lines of a typical star or "sun," the bright lines, especially of hydrogen, characteristic of chromosphere and prominences, and the bright green line seen in the sun's corona. And in the most carefully studied instance, that of Nova Aurigæ, these bright lines have been duplicated and displaced in the most intricate fashion. Later, as the star has faded, the spectrum, once so complicated, has simplified down to that of a gaseous nebula, a single, or it may be two or three bright lines. In the case of Nova Aurigæ, however, each of these lines was represented by a complex group, the meaning of which still lacks explanation; but the spectrum still offers a clear evidence of some connection, close and intimate, between suns and nebulæ. Whilst the distribution in space of these Novæ, within the Milky Way, or on some one or other of its branches, shows that the processes of change which have made the galactic stream the very trunk and stem of the sidereal universe are still most active there.

The progress of the science of astronomy during the century now drawing to a close, like the progress of other sciences, whilst it has effected the solution of some problems, and the gathering in of a vast body of fresh facts, has in very virtue of the new facts so gathered opened fresh problems to our attention. The horizon is not reached, it is only pushed forward.

The means of astronomical advance during the century has lain chiefly in the improvement of astronomical instruments; chiefly but not wholly. The discovery of Neptune by Adams and Leverrier still ranks as the greatest single achievement of the period, and this was a matter entirely of mathematical analysis, for there were plenty of instruments of the last century quite as capable of showing Neptune when its place had first been indicated. But, on the whole, the advance that has been here recorded has been essentially one depending on the improvement of old instruments and the designing of new ones.

The narrow field for observation prior to Herschel was due largely to the faultiness of the telescopes then procurable. A century earlier Newton had tried the refractor, and found it wanting; and when, in 1758, John Dollond laid before the Royal Society his method of correcting at the same time chromatic and spherical aberration, the Government added its quota of discouragement by imposing a crushing excise-duty on flint-glass, and thus rendering experiments so costly as to be prohibitive. Refractors were consequently small, with an effective aperture of not more than two or three inches, and the lenses were so indifferently ground that they showed the

star-images with "rays or tails, distorted into triangles or bulged into cocked hats."

The reflector had better success, but it was not until Sir W. Herschel arose that full advantage was taken of its capabilities. In his desire "to leave no spot of the heavens unvisited," and to penetrate as far as possible into stellar space, he strove continually to increase the light-grasp—that is to say, the aperture of his telescopes—and constructed in succession mirrors of seven, ten, twenty, thirty, and forty feet focal length. And with light-grasp he was careful to secure defining power, and he could report to Cavendish that his star-discs, so far from having the distorted shapes given by the refractors of the day, were "round as a button."

The Herschelian mirrors, however, needed not only a Herschel to make them, but a Herschel to repolish and a Herschel to use them. They have been superseded by the less costly and more easily managed mirrors of silver on glass, a great number of which are in use by amateur astronomers to-day; the largest, Dr. Common's mirror, of five feet diameter, dwarfing even Herschel's great forty-foot in size.

At the present time, however, the refractor is the more generally preferred form. Fraunhofer, at the beginning of the century, showed how achromatics of perfect defining power and considerable aperture could be made; and he has been followed by Merz, the Alvan Clarks, Sir Howard Grubb, and others. The refractors of two or three inches aperture of last century are represented to-day by refractors, like those of the Lick and Yerkes Observatories, of three feet or forty inches, and of perfect defining power. Such a discovery as that of the fifth satellite of Jupiter was only possible, even to the eyesight and observing skill of Professor Barnard, when aided by a telescope of this order.

Still greater is the improvement in the mounting of telescopes. The telescope is now equatorially mounted, and follows a star to which it may be pointed by a single movement given to it by clockwork, controlled in many cases by electricity, and fulfilling its duty with such exquisite fidelity that, with but slight supervision by the observer, the images of stars secured on photographs of even twelve hours' exposure merit Herschel's encomium of "round as a button."

The various mechanical devices for the comfort of the observer deserve some reference. The observing-room covered in by a movable dome, the means for setting a telescope to its place without the observer needing to leave the neighbourhood of the eyepiece, the different forms of platforms and chairs for the observer's convenience, have all aided to some degree in the

advance of astronomy. Of all these devices, that of the equatorial *coudé* takes the palm. Here, by a combination of plane-mirrors, with an achromatic object-glass, the eyepiece of the telescope remains immovable, no matter what part of the sky is under examination. The observer can, therefore, sit comfortably sheltered in his study, whilst without trouble or exertion any part of the sky is brought under his scrutiny. Much more important, however, are the improvements which have been made in the means for securing accurate measurements, whether of time, arc, or angle. The perfecting of astronomical clocks and the invention of the recording chronograph have secured the first, the micrometer and the heliometer the second, and the accurate division of large circles the third.

A power, the full importance of which we have yet to learn, has been placed in the hands of astronomers by photography. A record far exceeding in its delineation of multitudinous detail all that the most skilful observer could effect, free from mental bias or perturbation, is thus provided, which bids fair to eliminate the direct observer from some fields of astronomy. The entire surface of the sun is photographed in a thousandth of a second, be the spots and faculæ many or few, and each spot is represented in accurate detail. A thousand stars are shown on a single plate in their relative positions and magnitudes. As many lines are recorded in a spectrum in place, breadth, intensity, and character. And photography has the further advantage of scrutinising freely objects shining with light of higher refrangibility than the violet—higher, that is, than our eyes can perceive. Lastly, whilst the eye can do little but weary itself by much prolonged staring at an object too faint to be clearly seen, the photographic plate, if only exposed long enough, can pick up the faintest vibrations. For the study of the surface of the sun, and probably of that of the moon; for the study in general of celestial spectra, for the detection of new minor planets, for the delineation of the forms of nebulæ, for the mapping out of the countless millions of telescopic stars, photography has proved itself superior to direct observation; indeed, in some of these fields it has penetrated farther than the observer, however keen-sighted, can possibly do.

The spectroscope has been even a more powerful agent in the revelation of the constitution and physical condition of the heavenly bodies. Essentially a prism (or a diffraction grating), the light of sun, star, or nebula is by it resolved into its component parts; the ray of each different refrangibility is made to stand apart from its fellows, and to undergo separate examination. Thus was made manifest the fact that certain radiations were missing from sunlight as it reached us, a fact

which was soon explained as a consequence of the absorptive action of the gases above the solar photosphere. Thus was made known the yet more striking fact that nebulæ only transmit rays of certain very definite refrangibilities; a proof that they were chiefly made up of attenuated but glowing gases. Thus was disclosed the fact most striking of all, that the refrangibilities of the rays of many celestial objects had undergone a change before reaching us; a change due to motion partly theirs and partly ours; and in this way a new means was afforded us of attacking many an important question.

Many other instruments have done good service in the general progress. The pyrheliometer has afforded a measure of the solar heat, the bolometer of the heat, or rather of the absence of heat, from the moon. But the great agents in that progress have been the increase in size, definition, and completeness in mounting and management of telescopes, the introduction of photography, and the invention of the spectroscope.

The most striking feature of astronomical progress is the earnestness with which men have pursued knowledge for its own sake. This same thirst for knowledge is seen, indeed, in every science, but in none is it more completely divorced from utilitarian ends. Astronomy has, it is true, its practical side; it is the parent of scientific navigation; but it is impossible for any of its votaries to dream that success in it will bring him commercial or industrial profit. In general, the problems it offers are altogether beyond the range of man's material life; they lie in the plane of the purely intellectual. And so long as the bulk of mankind are disposed to seek enjoyment and happiness in the merely physical, so long will it be a matter of no small importance that a science which can offer no material advantage, which calls for no little self-denial, patience, and effort, which offers many disappointments, and the pleasures of which are exclusively mental, should have an irresistible attraction to not a few.

The facts of astronomy have already a wide diffusion beyond the actual workers in the science, and are destined to a wider diffusion still. As education becomes more universal and more thorough, as the periodical press becomes more competent to deal with matters of abstract science, and as readers desire more that it should do so; as the leaders of science accustom themselves more to addressing the public in lectures and in books, and are more encouraged in this, astronomy will be better and more generally understood. It is true that the mere diffusion of an acquaintance with its results will in itself have no elevating effect, indeed can have none; any more than the reading of the account of a battle in a newspaper will

give a man the courage of a soldier or the skill of a general. But even as that reading may fire the blood of one man to emulate the deeds of which he reads, and may induce another to study the principles of the strategy described, so a diffusion of astronomical facts is practically certain to increase the number of astronomical workers. And this result is full of advantage. For astronomical work is educational in the highest sense. It involves the training to delicate perception of ear and hand and eye; it calls for patience, endurance, earnestness, perseverance, punctuality; it demands the ingenious and skilful adaptation of the means possessed to the end proposed; it dwarfs the sense of the personal and individual by the vastness of the dimensions both of time and space with which it deals; it insists on the most scrupulous care, the most refined exactitude. Above all, it places before Man problems so great that their complete solution is for ever beyond his reach. And yet it constantly stimulates him to devise some fresh method of extending his researches, and so it leads to a continual and further development of his powers. It fits him, therefore, the better for enterprises and problems more purely terrestrial, and not infrequently supplies him indirectly with the means for coping with them. Thus the proof that light required time for its propagation, and the first determination of its velocity, came from a purely astronomical observation; the knowledge thus obtained has since been of high service in the domain of general physics, and the velocity has been redetermined independently by laboratory experiment.

There is, however, a field in which the diffusion of astronomical facts is of service beyond that of the enlistment of more workers. There are many who are precluded from actually taking part in astronomical research who still delight to note and think over its problems; and with the natural tendency of men to rest in the purely material, with the temptations to mere physical indulgence and luxury which our marvellous progress in the material arts is calculated to foster, it is no mean gain that the consideration of facts so stupendous, of problems so purely intellectual, should be of high interest to as large a number as possible.

To such the advance of the science during the past century will have taught the great lesson that the Cosmos, as we know it, is in essence but a single structure, one throughout all its amazing and infinite complexity and diversity of detail, one in its constitution, one in its development, one in its laws, a witness throughout its length and breadth and height that its Designer, its Maker, its Ruler, is One God.

ESSAY XXIV

THE DAWN OF REASON IN RELIGION

It has been given to few generations only to confess with Elijah, "We are not better than our fathers." Almost every century has, for some reason or other, prided itself on being more advanced and more enlightened than its predecessor, and our own forms no exception. We call our century a century of reason and enlightenment, and we can no doubt point to a goodly number of facts to support our claim. Still, this age of ours, though it has been an age of enlightenment, can hardly be called an age of reason, in the sense in which the age of Voltaire, Diderot, and Rousseau was. With them reason was everything; with us history or the past also claims a right to be heard.

Whatever seemed unreasonable to Voltaire and his school had no right to exist, and the formal enthronement of the Goddess of Reason was but the appropriate finale of a long and persistent struggle of reason against fact. Castles, palaces, monasteries, schools, universities, thrones, and churches, whatever offended against the abstract conclusions of reason, was swept away by torrents of eloquence, and, afterwards, by torrents of blood. Our own age has been far less severely logical, far less headstrong and uncompromising in carrying out the conclusions of reason. Its distinguishing feature has been a regard for fact and history; it has tried to build up much of what had been destroyed. It has found out that there can be no present without a past, and that there are lessons in history quite as important as the lessons of reason. It has tried to understand the past, to discover the use of many things which, through their abuse, had been well-nigh forgotten; it has endeavoured to understand what exists, and has learnt that to understand means often to forgive.

This tendency has shown itself not only in practical or political questions, but likewise in all that concerns our intellectual life. If our age has been an age of enlightenment, it has been so pre-eminently by what is called the historical spirit, the working of which we can trace not only in all branches of philosophical and religious research, but even in the pursuit of physical science.

Darwin, though he is often represented as a mere rationalist, was really the first to revive a truly historical study of nature, by showing how one continuous thought has held the whole of nature together in an unbroken growth or development. Philosophers have followed his example, and philosophy may be said to have almost become the history of philosophy. Hegel is generally supposed to have inaugurated this new era of thought, but he had been preceded by Herder, a philosopher, if of less logical power, of far greater knowledge of the facts of history than Hegel. The history of the whole world has been advanced of late by the spade rather than by the pen, and the new facts thus brought to light have been studied with the conviction that whatever is and whatever has been, was reasonable, had some excuse to plead, some *raison d'être* to appeal to, and some lesson to teach us.

Most of all, this historical spirit has been at work in the study of religion. Religion is no longer studied as natural religion only, the outcome of human reason, nor as, communicated to mankind, ready made, by what was called a primeval revelation. Religion is looked upon and studied as an unbroken growth, as an intellectual development more continuous even than the development of nature, as beginning with a period of imperfect *Moneres* and *Amoibes*, and leading up to a religion of mankind, as yet a postulate rather than a reality. We are to learn that through the long ages which have witnessed the growth of religions of every kind there was a purpose, that even the monstrous megatheria and hideous ichthyosauri in the lowest strata of religion had their purpose, that they have something to teach us, if only to be grateful for what is past, and to be hopeful for what is to come. We have to learn that there were no false religions, as little as there were false fishes and beasts. There were monsters, no doubt, but we have to learn that even these monsters had their purpose in the struggle for life and in the struggle for truth.

Ever since the days of St. Paul we have been told that the heathen worship the same God as the Christians. It is true that the men of Athens were warned by St. Paul that they worshipped God ignorantly, but with all that there remained the straightforward admission that they worshipped the same God. Little has that lesson of St. Paul been minded by Christian theologians in their controversies among themselves, still less in their controversies with the heathen. Dr. Pusey, in his controversy with Frederick Maurice, told his Christian antagonist that they were not worshipping the same God; missionaries, though not all of them, tell those whom they try

to convert that their god, or gods, are devils. If the heathen worship God ignorantly, do not the advocates of Christianity often attack the strange pagan gods ignorantly? It must be difficult, no doubt, to admit that behind the devilries and butcheries of the people of Dahomey there lies an ignorant worship of God. Still, we know to what corruptions even the best religions are liable, and we must not forget that the horrible devilries of the Inquisition, whether in Spain or in England, were called *autos da fé*—acts of faith—and that heretics, often the holiest of men and women, were generally burnt on the Lord's Day, on the ground, it would seem, that the better the day the better the deed.

This question, whether the religions of non-Christian people are all the work of the devil, or whether it was God who in times past suffered all nations to walk in their own ways, though He left not Himself without witness in that He did good, and gave us rain from heaven, and fruitful seasons, filling our hearts with food and gladness, has been argued for centuries, but, on the whole, with little effect. At a recent missionary meeting in London, St. Paul was severely taken to task for what he had ventured to say at Athens. It was thought that, even if what he said was true, it was not expedient to say it before the heathen. On the other hand, we find even before the Reformation that one of the highest dignitaries of the Roman Church claimed the right to speak of non-Christian religions in almost the same words as St. Paul had done. Nicolaus Cusanus in the fifteenth century was made a Cardinal, and was highly praised by the Pope himself, for his learned treatises on the religions of the world. Yet this is what he was bold enough to write: "Even those who worship many gods have borne witness to the existence of God, and in their many gods the polytheists worship, after all, the one Deity, though they have divided it among many gods. . . . It was the one God they worshipped in all the other so-called gods."

Cardinal Cusanus was by no means an indiscriminate admirer of non-Christian religions. He carefully examined the religions of Greeks and Romans, of Jews, and, as far as was possible at the time, of Hindus and Mohammedans also. How serious he was in trying to do justice to all religions he showed by learning Arabic, at his time no easy matter. He devoted a whole book, *De Cribratione Alchoran*, on the sifting of the Koran, to an examination of Mohammed's teaching, and pointed out what seemed to him the many errors of the prophet. And yet he was able to discover a certain harmony in all the religions of the world, as far as they were known to him, and on this harmony he built his hope of a universal religion, and of

universal peace. This was creditable for a Cardinal, particularly for a Cardinal of the fifteenth century.

But in our century also, and if not among cardinals, at all events among missionaries who have devoted the whole of their lives to the conversion of the lowest of the heathen, we find now and then the same enlightened sentiments.

The Rev. Nathan Brown, chiefly known by his learned papers on the dialects spoken on the eastern frontier of India, in the valley of the Irawaddy, was evidently as anxious to understand the inmost thoughts of those whom he wished to convert as to learn their dialects. We read in his Life * (p. 242):—

"On another occasion Mr. Brown asked a Brahman, 'Are there three gods or one?'

"'One God,' was the reply.

"'Were Brahma, Vishnu, and Siva all the same?'

"'Yes, the same God in three forms.'

"'Do not your Shasters speak of a Supreme God that is above Brahma, Vishnu, and Siva?'

"'Yes.'

"'Is this Supreme God visible or invisible, corporeal or incorporeal?'

"'He is invisible and incorporeal; without eyes he sees, without ears he hears, without feet he moves, and whatever is his wish, that comes to pass,' was the reply of the heathen man, who had never seen the Bible, yet was clearly aware of the existence of the one Supreme God.

"'It is this God,' Mr. Brown continued, 'whose religion I have come to preach—the invisible, incorporeal Being who is the Maker and Lord of all!' He then told him that all the stories in their Shasters about Brahma, Vishnu, and Siva were the work of their Pundits, and would never be reconciled with the doctrine of the supreme invisible God, and with doctrines which had been handed down from our first parents and had found a place even in their own scriptures."

Nor was it reserved to St. Paul and to a few enlightened spirits among Christians to recognise that, though the names of the gods may differ, what they are meant for is the same. In the ancient hymns of the Rig-Veda already we read that men use different names, such as Indra, Mitra, Varuṇa, or Agni, but that what really exists (the Divine) is only one. Krishṇa, himself a heathen god, goes even further, for he is introduced in the Bhagavad-gîtâ as declaring that even those who worship idols worship him. Nor was Greece without philosophers who could

* The Whole World Kin: a Pioneer's Experience among Remote Tribes. Philadelphia, 1890.

see what was behind names. Heraclitus, after declaring that day and night, winter and summer, war and peace, satiety and hunger, were all God, or that God was what they are, finishes up by declaring that God is called according to every man's pleasure.* Does that not show that Heraclitus was fully aware of the impotence of human language, and of the human intellect to reach the divine; that he knew that no names could name God, that no human thought could ever think the Divine fulness, or make itself an image, whether graven or ungraven, of the Deity, but that it was open to each man to use whatever names seemed best to satisfy his own mind.

But though the leading spirits in different countries and different ages have taught us that the many religions of mankind are but like dialects of one and the same religion, their utterances and their arguments have produced little effect on the millions, nor on those who profess to be the leaders of the millions. The older one grows, the more one learns that argument is not only of very little avail in these matters, but that it often produces the very opposite effect of what it was intended to produce. The more reasons are brought forward against a favourite opinion, the more attempts are made to defend it. Like loose sail under heavy rollers, our opinions seem to grow more hardened, our determination more obstinate, by the very force of the objections which are brought to bear on them, till at last our mind becomes altogether insensible to the most crushing reasonings, and to the most overwhelming weight of evidence.

It was for this reason that the writer determined at last to produce facts rather than arguments, by publishing translations of the important books which are considered sacred by the followers of the various non-Christian religions.† He had two objects in view: first, to convince the world that none of these books contained anything that could fairly be called the work of the devil; secondly, to warn others against exaggerating the mysterious wisdom of the East, which they supposed to be contained in the *Veda*, the *Zend-Avesta*, or the *Buddhist Canon*. He believes that both these objects have been more or less realised. People may say that many of these sacred books are tedious, antiquated, and useless, but no one can say that they contain anything of a diabolical character. Others may say that they contain grains of gold, sublime views of the Deity, excellent moral precepts for our conduct in life, but they would find it difficult to point out anything that was completely new to us, anything occult, mysterious, esoteric, or Heaven-sent.

* *Heraclitii Reliquiæ*, xxxvi., *ὀνομάζεται καθ' ἡδονὴν ἑκάστου.*

† Sacred Books of the East, vols. i. to xlvi., Clarendon Press, Oxford.

Our whole attitude towards other religions has been changed. When in the historical church of St. Mary's at Oxford we have heard Buddha, the founder of the most widely spread religion on earth, spoken of by the late Dean Stanley as second to One only, when in the same pulpit the founder of Islam was counted by the Bishop of Ripon among the great benefactors of mankind, we can see that the times have changed, and that some real progress has been made. We no longer hear of the *Mahound;* * and if the Buddhists are called atheists, even this name has assumed a very different meaning from what it had in former times. We know that the founders of Christianity were called atheists, not because they denied the existence of a supernatural Being, but simply because their idea of God was different from that of the Romans and Greeks. From the little we know of Buddha personally, chiefly from the Pâli texts, we should now be more inclined to call him an agnostic than an atheist. His is an agnosticism that arises from reverence, and not from contempt. In this sense Philistion, a contemporary and rival of Menander, used to say, "It is irreverent for thee to wish to know Him who does not wish to be known." †

It is true that before the beginning of our century it was almost impossible to form a correct idea of non-Christian religions, and it is chiefly due to the advances and discoveries made by Oriental scholars that a real study of these religions of the world has become possible. Orientals are fond of saying that all religions have risen in the East, and have set in the West. Though all religion has not yet set in the West, it is quite true that all faiths had their origin in the East, and, as all their sacred writings are composed in Eastern tongues, these tongues had to be studied before any one could approach the sacred texts. India is the mother of three religions, to say nothing of minor creeds, *Brahmanism, Buddhism,* and *Gainism.* ‡ The language of Brahmanism—Sanskrit—began to be studied at the end of the last century. Sir William Jones died in 1794, Colebrooke in 1837. But though they knew the Sanskrit in which the *Laws of Manu,* the *Mahâbhârata,* the *Râmâyana,* and the *Purânas* were written, they had not mastered the difficulties of the most ancient or Vedic Sanskrit. Colebrooke studied the Vedas, and we owe him the first valuable essays on that important branch of literature, but he did not undertake an edition of the text. It fell to the writer's lot to publish the

* *i.e.*, Mohammed.

† Ἀσεβεῖς τὸν οὐ θέλοντα μανθάνειν θέλων. Comparatio Menandri et Philistionis (Index Lectionum in Univers. Vratislaviensi, 1887).

‡ Pronounced Jainism. Every italic *k* should be pronounced ch; every italic *g*, j. If a whole word is printed in italics, then italics are represented by Roman letters.

editio princeps of the oldest Veda, the Rig-Veda, with the native commentary by Sâyana, in six large volumes 4to, from 1849 to 1873, and a second edition from 1890 to 1892.

The Sacred Books of the Buddhists are written partly in Sanskrit, partly in Pâli. Here it was Eugène Burnouf who acted as pioneer, particularly for the Sanskrit texts of the Buddhist religion, of which he gave an excellent account in his *Introduction à l'histoire du Buddhisme*, 1844.

The study of Pâli and the publication of Pâli texts did not make much progress till it was taken up by Clough and Burnouf, by Westergaard and Fausböll, both Danes; by Childers and Rhys Davids in England, by Oldenberg in Germany, by Sénart in France. Oldenberg published the whole of the Pâli text of the Vinaya-pitaka, or the Moral Code of the Buddhists; and last year the whole of the Sacred Canon, the three Pitakas, or baskets, appeared in print at Bangkok in seventeen large volumes, under the patronage of the King of Siam, the last reigning Buddhist sovereign.

Gainism is a religion which for a long time was treated as a mere variety of Buddhism. It is but lately, and chiefly owing to the labours of Professors Weber and Jacobi, that it has been recognised that the religion of the Gainas was founded by a contemporary of Buddha, called the *Gina*, the Conqueror, while his rival was called the *Buddha*, or the Awakened. There is no doubt a great similarity between Gainism and Buddhism as compared with Brahmanism, but the Gainas have their own peculiar doctrines and organisation, and would strongly protest against being taken for Buddhists. The sacred code of this religion is written in a Prâkrit dialect; that is to say, in one of the many Sanskrit vernaculars which were spoken in India in the fifth century B.C.

The sacred book of Persia, the *Avesta*, or *Zend-Avesta*, as it used to be called, was rendered accessible to scholars through the labours of Burnouf (*Commentaire sur le Yasna*, 1835), and afterwards of Spiegel, Haug, Mills, and Darmesteter. The question of the date when the Avesta was reduced to writing has been much discussed of late. But though that date may possibly be as late as the beginning of our era, the thoughts contained in it, and much of the language also, must be referred to a far earlier period, at least to the time of Cyrus or Darius. The re-establishment, and possibly reformation, of the ancient Avestic religion through the efforts of the Sassanian dynasty began in 326 A.D., and it is to the kings of that dynasty that we owe not only the preservation of the ancient Avestic texts, but likewise the important Pehlevi literature, chiefly concerned with an elucidation of the theological opinions of the Parsis.

The two half-religious, half-philosophical systems of China, that of Confucius and that of Lao-tze, were known to missionaries and scholars in Europe before the beginning of our century. Still, in this branch of religious literature also much more has lately been done towards a better understanding of the writings of Confucius and Lao-tze by scholars such as Stanislas Julien and Professor Legge.

The same applies to the Koran, which was studied, as we saw, as early as the fifteenth century by Cardinal Cusanus and others, and has now, with the help of Arabic commentaries, been so carefully edited and translated that anybody may readily acquaint himself with the doctrines taught by Mohammed in the different periods of his life.

These are the principal non-Christian religions whose sacred canons have been rendered accessible to us by the continued labours of Oriental scholars * :—

1. Vedic religion.
2. Brahmanic religion.
3. Buddhist religion.
4. Gaina religion.
5. Avestic religion.
6. Religion of Confucius.
7. Religion of Lao-tze.

We might have added the Jewish religion in its various phases. But this religion, as handed down to us in the Bible, has been so closely connected with Christianity that for practical purposes it can now hardly be counted as non-Christian. For a correct and truly historical understanding of the Old Testament, however, we are as much indebted to the recent labours of Oriental scholars as for a critical understanding of the Veda and the Avesta. The Old Testament, studied from a historical point of view, has become a different book to us from what it was to Cardinal Cusanus and to the leaders of the Reformation. It has gained a truly historical character, like the other Bibles of humanity. What is ironically called the Higher Criticism has imparted to it a higher character, a character of reality such as it never possessed before, while many difficulties connected with its text have been removed by a more scholar-like ascertainment of the circumstances under which each book of the Old Testament was committed to writing, and afterwards copied and recopied. It has not escaped at the hands of scribes the same fate to which all other books had to submit, and the results of which every scholar knows but too well from the large number of various readings that cover the margin

* Sacred Books of the East. Translated by various Oriental Scholars, and edited by F. Max-Müller, to be finished in fifty volumes. Oxford : Clarendon Press.

of every page of the Bible, both of the Old and the New Testament.

The bulk of the sacred books of the world is something enormous, and equally great is the difficulty of understanding them. The sacred book has generally been the first text in every literature that has been collected and preserved either by memory or by writing. Thus it has happened that the language of these sacred books is usually more ancient, more primitive, and more obscure than that of any subsequent books. The oldest relic of Sanskrit is the Veda; of Pâli, the Tripiṭaka; of Prâkrit, the Angas; of Persian, the Avesta; of Chinese, the Kings; of Hebrew, the Old Testament. It can be easily understood, therefore, that to undertake a translation of the more important of these books required considerable courage. A desire to possess such a translation had been widely expressed not only by theologians, but by philosophers and historians also; in fact, by all who were too honest to speak and judge of books which they have never read. But there were many difficulties in the way. The first difficulty was to get a publisher; for, though there were many students who wished to have these books, it is but too well known that those who read books are seldom able to buy them, but read them in public or private libraries. But though no private publisher was ready to undertake fifty volumes of sacred books, it reflects great honour on the authorities of the Imperial Academy of Vienna, and on the then Minister of Finance, that they came forward to express their willingness to defray the expense, and offered the writer at the same time a place in the Academy and a professorship in the University of Vienna. He was on the point of accepting this generous offer, when the University of Oxford proposed that he should stay in England and bring out this collection of translations in English at the expense of the University Press. He had so many friends at Oxford, and the place had become so dear to him, that he could not hesitate to accept, on condition, however, that during the progress of the work he should be relieved of his professorial duties, and on the clear understanding that the work should be treated as a purely academic publication, undertaken without any view to profit, that the editorship should be entirely in his hands, and that he should receive no honorarium and no benefit whatsoever for his editorial labour beyond the temporary dispensation from the duty of delivering his public lectures.

After the material obstacles were thus removed, the next difficulty was to make a selection of the books to be translated, and of scholars competent and willing to translate them. This took a long time, for the task was not a grateful one. Though

much had been done, much more remained to be done for a proper understanding of these ancient texts. One scholar, the late Professor Roth, who by his dictionary had done more for the Rig-Veda than anybody else, declared that a translation of these hymns was a work for the next century, and that no one could or should undertake it at present.

Scholars naturally preferred translating a verse or a hymn here and there, correcting a wrong reading, suggesting an ingenious translation, but they shrank from committing themselves more than was necessary. To a certain extent, Professor Roth's prophecy has been justified; for, though there are two volumes of translations of Vedic hymns by the writer and Professor Oldenberg in this collection, this is but a small portion in comparison with what remains to be done. There are, no doubt, complete translations of the Rig-Veda which we owe to Langlois, Wilson, Ludwig, Grassmann, and Griffith, each possessing special merits of its own, particularly those of Ludwig and Griffith, but all carried out on principles which are no longer considered satisfactory. Similar difficulties had to be met in almost every one of the sacred books, and yet the writer was so fortunate as to persuade some of the best living scholars to come forward to help him, and by this time forty-eight volumes are translated, one remains to be done, and there will be two volumes of a *General Index*. And what is most extraordinary, though a considerable loss had been expected, the sale of the whole series has been so successful, that of several volumes a second edition had to be published, and there was on many of them a profit instead of a loss, as had been anticipated. This shows, at all events, how widespread an interest there existed and exists in the non-Christian religions of the world, for the sale of an edition of 1500 copies means a very large number of readers. Nor are there signs wanting that these by no means attractive or amusing books have been read, and carefully read, by theologians and philosophers. The whole tone in which the sacred books of the heathen are spoken of is completely changed. The very term of heathen or pagan seems to be avoided, as if it implied something opprobrious. What were called heathen religions are now treated as phases in the historical development of religious ideas, and instead of looking for what is strange, grotesque, and offensive in them, students are far more bent on discovering what is reasonable, useful, and true in these newly opened mines of ancient thought.

The old theory that there was a universal primitive revelation, and that the ancient religions are fragmentary survivals of it, once so eloquently advocated by Bishop Butler, exists no

longer. In his sermon preached before the Incorporated Society for the Propagation of the Gospel in Foreign Parts, on the 16th February 1738, the Bishop said: "The general doctrine of religion, that all things are under the direction of one righteous Governor, having been established by repeated revelations in the first ages of the world, was left with the bulk of mankind to be honestly preserved pure and entire, or carelessly forgotten, or wilfully corrupted. And though reason, almost intuitively, bore witness to the truth of this moral system of nature, yet it soon appeared that they did not like to retain God in their knowledge as to any purposes of real piety. Natural religion became gradually more and more darkened with superstition, little understood, less regarded in practice, and the face of it scarce discernible at all, in the religious establishments of the most learned polite nations." We are told by Mr. Gladstone that "the first of these repeated revelations is what is known as natural religion, though he admits that it was not confined to natural religion."

All these questions, which occupied the thoughts of former theologians, seem hardly to exist any longer for the student of the science of religion. Religions are now treated simply as historical facts, and the question whether they were revealed or not is no longer asked. It is well known that nearly every religion is represented by its defenders as revealed, but this is a question that has to be settled by the Pundits. These Pundits generally begin by defining what they mean by revelation, and then go on to prove that all the true marks of revelation are possessed by their own religion, and, if they are able to prove this, by no other religion. For no other religion has the claim to revelation been established by a more elaborate system of arguments than for the Veda. But the Avesta, too, represents itself as the actual word of Ormazd in his conversations with Zoroaster. Mohammed declares that in the Surahs of the Koran he simply repeats what the Archangel communicated to him. Buddha alone is content with truth, and requires no further confirmation, while the founders of the two systems of religion or morality prevalent in China appeal to the authority of the ancients as sufficient for all purposes. The science of *Comparative Theology* looks upon all religions as the outcome of a historical development. It should be called *Comparative Theology*, and not, as we hear so often, *Comparative Religion*. Religions are the subject of our studies and our comparisons, just as bones are the subject of anatomy. If, then, we speak of Comparative Anatomy, and not of Comparative Bones, we should speak of Comparative Theology, but not of Comparative Religion. What is most interesting to the student of Comparative Theology is exactly

the first beginning of each religion, which must be studied in its history, but cannot possibly be disposed of by an undefined word, such as revelation. Whoever invented that word must have claimed for himself a knowledge which passes the limits of ordinary human knowledge; but if so, he ought at all events to have told us in what language this revelation was communicated, and whether revelation is supposed to be the word of God, or to contain the word of God. But, as just observed, all these questions exist no longer, or they are left to the Pundits. We begin with the simplest beginnings, the mere recognition of sun and moon and stars, of days and nights and seasons, and we see how, in the very naming of these objects, an agent for each was implied by necessity, the necessity being that every root from which the names of these physical objects could be derived was expressive of an action. The sun, therefore, would mean, from the very first, either the brightener, or the warmer, or the nourisher, or the ruler. The sun would naturally occupy a decided prominence among these physical agents or rulers; but the mere fact that the sun also had to obey a law, had to rise and to set as if by command, would imperceptibly lead the human mind further to the recognition of an unseen Ruler, a Supreme Being, the Maker and Ruler of all things, of gods and men. This is one way by which men were led from nature to nature's gods, and at last to a God above all nature. There were many other more or less difficult roads, all leading up to gods, and to a God above all gods. This God above all gods is known already in the oldest religious literature which has come down to us, in a hymn of the Rig-Veda:—

"Yáh	devéshu	ádhi	devá*h*	éka*h*	âsît."
"Who	the gods	above	god	alone	was."

This was not a miraculous revelation; it was the result of honest human efforts, which we can trace step by step in historical succession and continuity. Yet it is doubtful whether any of the religions the history of which is known to us has gone beyond this point, so far as the majesty of the Deity is concerned. Nor would anybody engaged in a serious comparative study of religions grudge the ancient pre-Christian religions the possession of any truth; and if we find in some of them almost verbatim coincidences with what we ourselves consider truth, we ought to remember that a truth is not less true because it has been discovered by others as well as by ourselves.

The spirit, not only of toleration, but of real sympathy with other religions, has been spreading of late years most rapidly.

We have had lectures delivered in most universities on Comparative Theology, on the history of religions, on the philosophy of religions. We have had the Hibbert foundation in England, the Gifford foundation in Scotland, a Chicago foundation in America, all intended to supply lectures on the Science of Religion. We have seen museums founded at Paris (Musée Guimet), at Washington, and elsewhere with the set purpose of illustrating the history of various religions. The very Bampton Lectures at Oxford, which were founded for the defence of the Christian religion, have been pervaded by a new spirit, and, instead of criticising the heathen religions, they have been devoted to the discovery of what is good and true in them. But the greatest triumph of this new religious spirit has been the *Parliament of Religions*, held in Chicago in 1893. The name was perhaps not well chosen; Congress or Council would have seemed more appropriate than Parliament. But the name has been accepted, and is now consecrated by use. This Parliament of Religions was at first a mere auxiliary of the great Columbian Exhibition, but it has eclipsed the original Exhibition, and has assumed a historical importance which will last long after the Industrial Exhibition of Chicago has been forgotten. Few people had any idea of what this Parliament of Religions was meant to be. It has grown into something quite unexpected, and its very originators have probably been most surprised by the world-wide interest it has aroused, and by the world-wide consequences which it begins to produce. Here were people gathered together under the same roof from every part of the civilised world, representatives of all the great religions of the world; not only Christians of every denomination, but Jews, Brahmans, Buddhists, Gainas, Mohammedans, from India, Burmah, Siam, China, Japan, some holding high official positions and speaking with authority, others full of enthusiasm, and all filled by a spirit of brotherhood such as has never been witnessed before even among Christian sects. A Roman Cardinal presided one day, a Rabbi another, a Buddhist the next, all joining in the same prayers and hymns, all receiving the same blessing from whoever presided, all listening reverently to the addresses, which were delivered with great tact and moderation, so that there was not a single unkind word uttered, except on one occasion, and then not by a non-Christian speaker. A Roman Cardinal, Roman Bishops, Anglican Bishops, and Dissenting ministers all sat peacefully together, as if ashamed to disclose before others the differences that separated them among themselves. The heart even of the Pope was so much touched that he sent the most encouraging messages to the Cardinal who presided at the Congress. Such a sight has never been

seen since the beginning of our era; no Œcumenical Council could be compared with it, considering what the οἰκουμένη, the inhabited world, was in their time, and what it is now. Of course, no attempt was made at conversion. It was simply a religious exhibition, where every religion showed what it could produce, and, no doubt, displayed its wares in the most favourable light. This could not be so again at a second Parliament of Religions, which, we are told, is to be held at Paris. Here it would be almost inevitable that attempts should be made to compare the doctrines of the various religions of the world, and to point out what doctrines they all share in common, and what are the articles of faith on which they differ. But though there was nothing of all this at the first Parliament, yet certain salient points came out even there in the strongest light. What Bishop Butler called the general doctrine of religion, that all things are under the direction of a righteous Governor, seemed to be accepted by most of the representatives present, whatever name they might assign to this righteous Governor, or to this Providence. But there was more than that. The sense of human brotherhood, in spite of differences of language, blood, and religion, found expression again and again without a word of objection from any quarter. It was one of the doctrines on which all present seemed to be in hearty agreement, even if they could not have produced an express commandment in support of it from their respective Bibles. Again, no one present seemed to doubt the existence of an invisible world, though nothing was said about the exact nature of it. No one denied the value of prayer, though a prayer in the sense of petition would certainly have been condemned, particularly by the Buddhists. If little was said of sacrifices, self-sacrifice was admitted to form part of the Moral Law—nay, to constitute a social obligation. The Golden Rule to love our neighbour as ourselves was proved to be present in most religions, sometimes in the very words of the New Testament.

In fact, if any one had risen and asked the members of the Congress present to say Yes or No to the essential doctrines of Christianity, without saying that they were Christian, though there would have been some Noes, the immense majority, we firmly believe, would have said Yes. In fact, it became clearer and clearer, even in the limited exchange of opinions that took place, that the points on which all agreed in their hearts were many, the points on which there was a decided antagonism were few, but that there were several points on which the information was deficient. Polytheism, which seems to form an insurmountable barrier between Christianity and other

religions, might easily have been explained away, for we saw that, as far back as the time of the Veda, a belief in the one God above all gods or powers had been clearly recognised in India, the very hotbed of Polytheism.

As to Polygamy, it can hardly be called a religious dogma, and as a social institution it is dying out slowly but surely through the advance of civilisation. Even Mohammedans begin to be ashamed of their harems, and would hardly go so far as a well-known Scotch divine, the Rev. Dr. D. M. Dodds, who declared that polygamy is not incompatible with a sound, if not perfectly developed morality, and with the highest tone of feeling. It must be borne in mind that some of the speakers who claimed to speak with authority of their religion possessed really no such authority, nor the necessary knowledge which can only be acquired by a careful study of the history of religion and of the sacred books. If no one had been allowed to act as spokesman for his religion who had not at least read his own Bible in the original, and could quote from it chapter and verse in support of his statements, the time occupied would have been considerably reduced, and a clearer insight might have been gained into the original character and the historical development of each religion. But with all the drawbacks of a first attempt, the Council of Chicago will always stand in history as a monument, and a triumphal monument, for all those who have been at work for generations to make such a Council possible; for all who have cared for religion more than for religions; for all who believe that there can be a recognition of certain great religious truths, such as the Holiness of Truth, the Fatherhood of God, and the brotherhood of men, without any interference with national traditions, ceremonial customs, and philosophical theories.

The Council at Chicago was no more than an open manifestation of ideas which have slowly been gathering strength in every part of the world, a reassertion of St. Augustine's old principle that there is some truth in every religion, a pledge that religion, which was meant to unite the hearts of men in the love of God, should no longer be allowed to divide individuals and whole nations into hostile camps ready to massacre one another for the greater glory of God, but that there should be henceforth "peace on earth and goodwill towards men." *

At Paris, if the next Parliament of Religions is to be held

* There has already been a complete bibliography of the Chicago Parliament of Religions, including the views of most of the leading Christian sects. The most comprehensive work is "The World's Parliament of Religions," by Rev. John Henry Burrows, D.D., Chairman of the General Committee on Religious Congresses. 2 vols. Chicago, 1893.

there, some more definite work will have to be done, and will have to be carefully prepared beforehand. What is wanted is really a new religion, though that religion will probably turn out to be the oldest religion of the whole world. It ought to contain nothing but what the believer in every one of the great religions of the world can honestly hold, without prejudice to his own religion.

But though by the side, or rather on the foundation of this universal religion, the existing religions would continue, they would probably each have to surrender something that offends the tender consciences of the followers of other forms of faith. The Hindu would have to surrender polytheism, which in its vulgar form has long been condemned by the best among them. Polygamy also would have to be condemned wherever it is still tolerated at present. The same applies to the system of caste and to several of its consequences, prohibitions of marriage, child marriages, ill-treatment of widows, and all the rest. In China the duty of blood-revenge enforced by Confucius would have to be abolished and handed over to judicial tribunals. The Buddhists would have to give up the indiscriminate encouragement to a monastic and celibate life, which, as once in Europe, so in India, has created a society of idlers within a society of hard-working men and women. With this change, a number of superstitions and childish customs would probably vanish by themselves.

The followers of Islam would have to change many of the precepts which may have been useful for Bedouins in the desert, but are no longer applicable to a civilised state of society. The Jews who became Christians showed how an old and failing religion may be revived, and the Christians themselves may well be proud of having set an example in reforming their time-honoured faith. At the time of the Reformation they surrendered many things which seemed essential, such as the worship of the Virgin, the worship of Saints, and even where they retained certain ancient dogmas and rites, they assigned a new and a higher meaning to them.

Why should not other religions produce men of the same calibre as our Reformers, and by new reforms bring back their faith to its original purity or raise it to a higher level?

But these reforms, though they might be encouraged, should be left to each religion. The really important work would be to find a nucleus of doctrines, however small, on which the followers of all religions might agree, and an open acceptance of which would constitute membership of the new religion. These common doctrines should be chiefly such as give a religious sanction to our social duties; first of all, the

Holiness of Truth, and after that the various duties inculcated by the Ten Commandments of the Christians and the Ten Rules of the Buddhists, all of which may be traced back to truthfulness towards God, truthfulness towards ourselves, and truthfulness towards our neighbours. We are often told that all Christian sects, in spite of their differences, are members of the one Catholic Church. Why should not the same apply to the followers of different religions? Why should they not feel themselves and profess themselves members of a universal and eternal religion, though at the same time remaining faithful to their special national creeds, the creeds into which they were born, and trying to purify them from all that is useless, mischievous, false, and offensive to others? A feeling of real brotherhood would then hold the world together, and the consciousness of an agreement on essential points would make toleration easy for national peculiarities and endless differences of doctrine. It is clear that this is the direction in which the world is moving, and this seems to be the task which the next "Parliament of Religions" should set itself to begin, leaving it to future generations to finish the great work, the religious unity of all mankind.

ESSAY XXV

RETROSPECT—CONCLUSION

In our Introduction we had to claim the forbearance of our readers for omitting to discuss at any length certain questions which might be deemed, by some, important in connection with the advance of civilisation, as, for example, international alliances and aggressive warfare amongst civilised peoples; and now we must once more beg for their consideration in having failed, owing to limitation of space, to deal with some other subjects of more or less interest in relation to our inquiry.

We shall perhaps be charged by enthusiasts or interested persons with sins of omission in having overlooked such matters as bi-metallism, the great accumulation of wealth by classes or individuals, debasing amusements, the degradation of literature in certain of its branches, the bickerings of theologians, and even such religious persecutions as carry us back to the dark ages.

The currency question, although important in its economical aspects, can hardly be said to affect vitally the progress of our civilisation. The bi-metallist agitation is mainly due to the great fall in the prices of certain articles during the last generation, and bi-metallists attribute that fall to the scarcity of gold. This is denied by their opponents, who maintain that there is no such scarcity, and that the fall is the result of excessive production, and one of the effects of scientific invention and discovery. The agitation is organised, and perhaps subsidised, by persons who are interested in silver-mines, or who feel the inconvenience of commercial intercourse with countries using a silver standard, such as India; but the whole tendency of the past twenty years has been towards a gold standard, a fact, the bi-metallists will say, which is calculated to create an increased scarcity of gold. Be that as it may, France, Germany, Belgium, the Scandinavian kingdoms, and the United States have already adopted it. Austria-Hungary is following their example; so, too, Chili; and Russia will probably establish a gold standard before the year is out.

Notwithstanding this, however, it would be unsafe to speculate on the ultimate result of the currency agitation upon the prosperity of particular States, but, as already remarked, it is not likely to have any permanent effect on the general progress of civilisation.*

A far more serious problem than the currency question (looking at the socialistic tendencies of our day) is the great accumulation of wealth in the hands of the comparatively few, regarded in conjunction with the grinding poverty of the many; and although this state of things is more conspicuous in our own country and the United States, it is likely to extend with rapidity to other countries. For, notwithstanding the cry of industrial competition and diminished profits in trade, there is a great increase of wealth, which accumulates mainly amongst a comparatively limited number. In Great Britain this is shown by the weekly published record of "Wills and Bequests;" in the United States by the fabulous sums which are expended, not only upon worthy objects, but upon luxuries and the frivolities of fashion. The facility with which bubble-companies are floated, the low rate of interest, and the high market value of good securities all testify to the accumulation of savings and of unemployed capital. But large fortunes do not necessarily breed corruption; the gains of industry may be legitimate and profitable to all classes, and their expenditure is often beneficent. In so far, increasing wealth is conducive to civilisation; it is only when such fortunes serve to maintain their possessors in luxury and idleness that they become a curse to the individual and a danger to the State:—

> "Ill fares the land, to hastening ills a prey,
> Where wealth accumulates and men decay." †

No Empire ever fell through poverty; many have been undermined and ruined by wealth and luxury. It is quite

* From a valuable table of statistics, with which the writer has been furnished by Mr. John Dun, the able Managing Director of Parr's Bank, it would appear that the gold production of the world has risen steadily from £26,130,000 in 1891 to about £40,000,000 in 1895; whilst the silver production, in ounces, rose in like manner from 137,171,000 in 1891 to 166,602,000 in 1894, but the estimate for 1895 is slightly less than for the last-named year. We should have appended the figures of the world's coinage of gold during the above years, but they are valueless for the consideration of the question. For instance, England in the three years 1891–3 issued £28,852,000, but she withdrew and recoined £27,268,000, so that little more than £1,548,000 of new gold was used. According to American statistics, there was in the Banks of England, France, Germany, and Associated Banks of New York, a few months since, an aggregate sum of £186,000,000 in gold, being an increase of £65,000,000 in ten years; and, according to the U.S.A. Mint Report, 1894, the quantity of gold available for "the coinage of civilised countries" is increasing. The proportion of the production of gold used in the arts is 40 to 50 per cent. of the whole. We give these figures, not for argument, but as being probably of interest to some of our readers.

† Goldsmith.

possible that history may some day repeat itself, but the multiplicity of rising States in modern times, and the more general distribution of power, would prevent the downfall of any particular realm from impeding the progress of the entire race.

In connection with debasing amusements, it may fairly be asserted that, so long as gambling on the turf and at the table is encouraged by men of high degree, there is little prospect of its extinction; and that bull-fighting, killing animals for mere amusement, and other cruel forms of sport are still indulged in or tolerated amongst nations calling themselves civilised. But, on the other hand, it must be remembered that many barbarous practices have died out. Cock-fighting, bear-baiting, prize-fighting, are things of the past; public hangings, which formerly attracted crowds of men, women, and even children as sight-seers from long distances, have given place to executions within the prison walls; and it will be strange if, during the coming century, capital punishment is not completely discarded as a relic of barbarism. A general refinement (not much encouraged, however, by certain organs of public opinion) is spreading throughout society, and the debasing pleasures of bygone days are giving place to such amusements as golf, foot-ball, cycling, and other athletic sports; with concerts, lectures, the Sunday opening of picture galleries and museums, and other intellectual enjoyments.

The dissemination of useful literature in all its forms has been fully dealt with in our Essays, but it must be confessed that the close of the century has witnessed, under the guise of "realism," the irruption into literature of a class of works which cannot fail, for a time, to exert a corrupting influence. Vivid and humorous descriptions of low life in camps and barracks, infidelity in married life justified and held up to sympathy—these have taken a momentary hold upon the minds of certain classes of society. France is the cradle of this phase of literature, and thence it has spread throughout Europe, and, having at length crossed the channel, has produced a bevy of writers here whose talents might be better employed. But these are only excrescences upon a healthy realism, such as the world has never yet witnessed. What are the imaginings of writers of fiction whose stories were, and are still, enlivened by descriptions of thaumaturgy, compared with the realities of the camera and the phonograph, aided by the power of electricity? The vision of an absent person, as it was conjured up by the clumsy tricks of the necromancer, is puerile when compared with the living and moving scenes of the kinematograph, or with the words of the phonograph spoken by absent persons. The time is not far distant when it will be possible to bring back before the mind's

eye, and see and hear departed friends as they were seen moving and speaking in the flesh; and this and similar realistic phenomena cannot fail to stimulate enlightened progress, and to dispel superstition and credulity.

There is another factor in the progress of civilisation which, it may be said, we have overlooked, namely, politics. Those are undoubtedly purer than formerly, and there is one striking characteristic of the latter part of the century in regard to the subject which certainly deserves a passing notice. That is the jealousy with which the private lives of eminent public men are being scanned by the community. Formerly there was one code of morals for great statesmen (as there is still for princes), and another for common mortals; what was sinful in the latter was rather meritorious than otherwise in the former; but we have changed all that. The proved immorality of a great Irish statesman has put back the claim of a whole nation to autonomy, and there is rarely a general parliamentary election in which the private lives and dubious acts of some of the candidates are not fiercely assailed. Such criticism—and it is likely to extend and intensify—speaks volumes for the growth of refinement and of just sentiment in society.

Then as regards the quarrels of sects, and the influence exercised by teachers of religion. As in the case of laymen, many dignitaries of the Church set an example of luxurious living, in strange contrast with the privations of thousands of their "flocks," and even of their own helpers who do the pastoral work, and who are barely able to procure the necessaries of life. Whilst the tendency of nations is towards peace, these princes of the Church, followers of the Prince of Peace, keep up the glorification of war by blessing ironclads and regimental colours. That such customs should survive in this boasted land of progress and enlightenment is bad, but what must be said of the religious persecution which still disgraces the civilised world; the anti-Semitic fury of the Russians, and the less cruel persecution of the Jews in other Continental countries; the persecution of the Stundists in "Holy Russia;" and the infliction of incredible atrocities by Moslems upon Christians in the East, with the representatives of the great Christian Powers looking on helplessly! Such survivals of barbarism brand the close of the century with a stigma which cannot fail to excite horror and amazement in future generations.

But with all these drawbacks to civilisation, which we have no desire to conceal or to minimise, it must be admitted that the general tendency of the age is towards improvement—in some of its phases astounding. Our readers will have noticed that in no instance has any of our contributors endeavoured to

point out a royal road to perfection. Great as the temptation has been to take optimistic views, or to appeal to the reader's imagination, as some would-be reformers have done and continue to do through the medium of fiction or of oratory, we have held ourselves chained down to bare facts, being satisfied with what we believed to be legitimate inferences for the near future. The sweeping proposals of land or social reformers, which sound well in theory, but fail to take into consideration what are insurmountable obstacles to their accomplishment, and which are, therefore, never likely to be put to the test of practice, have been briefly referred to, but changes actually in progress have formed the basis of our reasoning.

It has been shown that under favourable circumstances, where the land is not too dear, the most satisfactory form of tenure, and the one best calculated to promote the welfare and independence of the cultivators almost everywhere, is occupying ownership; peasant proprietorship, in fact. The exceptions, where tenancy is preferable, have been dealt with, as also the imperfection of tenant-right laws, which leave the tenant too much at the mercy of his landlord; and the legislation and charges for the transfer of land, which bear onerously upon would-be small owners, whether for agricultural or building purposes. It has been pointed out how the debated problem of great or small holdings is being gradually solved by co-operation and credit-banks, and how the creation of small holdings and allotments is bringing into existence an entirely new class of cultivators in towns as well as in rural districts. The changes in progress, therefore, in the occupation and cultivation of land cannot fail to have an important effect on the condition of the labouring classes, who contribute largely to the prosperity and advancement of the whole community.* The produce, as well as the tenure and cultivation, of the soil has been treated in its relations to the material improvement and refinement of mankind. Cheap bread, meat, and wholesome beverages; imported natural productions, such as the luscious fruits of the sub-tropical and torrid zones, hitherto luxuries only within reach of the wealthier classes, along with greater skill and care in the preparation of every kind of food, have exercised a beneficial influence upon the physique as well as on the tastes of the poorer classes. The subterranean wealth of the world, its mineral treasures, some of which are but just beginning to be disclosed and utilised, have already stimulated every form of industry, and are ministering to the prosperity and enlightenment of every nation and every clime. The em-

* The perusal of Mr. Bear's little work, "A Study of Small Holdings" (Cassell, 1893), is strongly recommended to well-wishers of the agricultural labourer.

ployment of those treasures, aided by invention and discovery, and by the intelligent application of Nature's forces, is transforming the earth's surface, by intersecting it with roads, railways, tunnels, and canals; making a highway of the ocean; and, by means of posts, telegraphs, and telephones, enabling men to talk with one another and exchange ideas from the farthest corners of the earth. By creating community of interests those agencies are tending to throw down the barriers which still divide the human race into hostile camps, each contingent fighting for its own hand.

The introduction of labour-saving machinery, one of the most striking characteristics of our day, whilst it is causing a certain amount of suffering and dissatisfaction amongst handworkers (an evil which is to some extent mitigated by the combinations of the last named), is making possible the utilisation of the earth's riches for her rapidly increasing population, whose wants must be provided for; and will eventually raise the civilised peoples from labouring animals to thinking beings.

How this material and social improvement of the race has been aided by economic changes has been shown at some length. Higher wages and shorter hours have given more leisure from toil. Trade Unions and Co-operative Associations have encouraged thrift. Improved sanitary legislation; legislation for removing the disabilities of women, and for the protection of children, has smoothed the upward road of the weak and helpless, although very much remains to be done in that direction. Other agencies—schools, public libraries, the press, lectures—have helped in the same direction; whilst a new awakening of the conscience of the rich has brought into existence numerous philanthropic movements which have created greater sympathy between all classes of society.

The attempts, more or less successful, which have been made to substitute arbitration for the barbarous expedient of war in the settlement of international disputes, following close upon the establishment of international exhibitions, and congresses having a similar tendency, have been dealt with at some length; and whilst these pages are passing through the press important movements are on foot which promise much for the future.

Lord Salisbury, a hesitating and cautious statesman, appears to have arrived at the conviction that the safety of this country is not likely to be jeopardised by an arbitration treaty with the United States, and under the pacific influence of that country, it is more than probable that the negotiations now proceeding will lead to the establishment of an International Court for the two great English-speaking nations, and that between them at

least the chance of war has passed away for ever. But more important still has been the reported acceptance by our Queen of the post of arbitrator in a dispute between Chili and the Argentine Republic. None but such persons as are blinded by the glamour of military glory will fail to see in these incidents great promise for true Christianity and the peace of the world.

"Our Knowledge of the Universe" is a subject of such vast proportions that we have been able to touch upon one only of its phases, namely, our dawning knowledge of the constitution of the heavens. But the expansion of man's intelligence has been, of late years, quite as greatly promoted by the study of the phenomena which come within his immediate reach in the earth's crust and upon its surface; and its bearing upon the theological views of thoughtful men has been still more striking. If the discoveries of Galileo startled the religious world of his time, those of modern scientists have created an equally great commotion in ours. The observations of Darwin, Wallace, Von Baer, and others in biology; of Lyell, Murchison, and a host of geologists and palæontologists; the discoveries and generalisations of Grove, Joule, Tyndall, and many more in the realm of physics, have laid the foundation of a new theology, which our esteemed collaborator has called the "dawn of reason in religion," an awakening to which his own researches, and those of other eminent philologists, as well as Biblical critics, have largely contributed.

Denounced at first as atheism, the rational method of dealing with theological questions has been steadily gaining ground in recent years. Whilst in the earlier stages of the controversy the fear of ostracism prevented any but the boldest thinkers—the Huxleys, Virchows, and Vogts—from giving public expression to their views, it would now raise a smile on the countenance of a thoughtful and well-instructed man if he were asked whether he still believed in the literal interpretation of the Mosaic account of the Creation, or in the immediate and special interposition of Providence for the production of a new species. It is impossible to predict what further developments are likely to take place during the coming century, but the tendency of the observations and thought of to-day is distinctly towards one initial form of matter, one primary force, one immutable and inviolable law in the realms of physics and of ethics, with One Supreme Intelligence ruling over all.

To conclude: The chief movements and tendencies which characterise the close of the nineteenth century, and which carry with them the promise of a better and more enlightened world in the twentieth, are these:—A fairer occupation of the

soil and better remuneration for the cultivator; the conquest of Nature and the utilisation of her forces and productions; the material, moral, and intellectual elevation of the labouring population generally; the decrease of drunkenness, pauperism, immorality, and crime, and the reformation of the criminal; a higher and truer appreciation of the great worth and noble qualities of Woman, and the better protection and care of children and of the lower animals; the enfranchisement, union, and pacification of the nations; the substitution for superstition, priestcraft, and idolatry, of a scientific and rational theology based to some extent upon the various creeds and sentiments of the whole race, with its necessary corollaries, a nobler ideal of religion and a higher conception of the attributes and ways of Providence. Whoever aids in the accomplishment of any of these objects—and all may do so, though not perhaps with equal or immediate effect—ministers to the welfare of his fellow-men, and worthily performs his part in the progressive civilisation of his day.

APPENDICES

APPENDIX I.

A GLANCE AT THE APPROXIMATE WAGES AND COST OF CERTAIN NECESSARIES OF LIFE AT THE CLOSE OF THE NINETEENTH CENTURY, COMPILED FROM THE MOST TRUSTWORTHY OFFICIAL SOURCES, AND CONFIRMED BY PRIVATE INQUIRIES. By the EDITOR, assisted by H. A. FOWLER.

Country.	Trade.	Wages.	Hours.	Bread.	Meat.	Rent of Workman's Dwelling.	Remarks.
England (1895)	Building trades	34s. per week	49 per week	1d per lb.	Bacon, 4d. to 10d. per lb. Meat, 6d. to 8d. per lb.	6s. to 8s. per week	* Agricultural labourers. "Every man who is head of the house receives house and garden free, 1000 yards of potatoes in drill, and coals, led free. A son living with his father receives another lot of potatoes. . . . In a rural district the value generally is— House and garden, £4 10; Potatoes, 4 0; Coals led, 1 4; £9 14. These perquisites therefore amount to about 3s. 8d. per week.—"Northumberland, Lincolnshire, Agricultural Labourers Perquisites" (*Board of Trade Report*, 1894).
	Colliers (hewers)	5s. per day	6½ to 13 per day				
	Spinners (men)	30s. to 40s. per week	Average, 56½ per week				
	Sailors (sailing-ships)	£3 to £3, 5s. per month	..				
	„ (steamers)	£4 per month	...				
	Labourers	15s. to 30s. per week	8 to 14 per day				
	Agricultural labourers	9s. to 15s. per week. With privileges: land and cottages.*	8 to 14 per day				

France (1885)	Miners (average)	4s. 2d. per day	8 to 10 per day	1½d. per lb.	8d. to 9d. per lb.	From £1, 4s. to £4 per month in Paris and Orleans	In the iron districts families are lodged in cottages, or parts of cottages, by their employers at from about £3 to about £4, 10s. per annum, according to the story occupied.
	Cotton-spinners (Seine)	4s. 7d. per day	8 to 10 per day				
	Skilled workmen (Seine)	6s. per day	10 per day				
	Joiners (Seine)	3s. 9d. to 8s. 4d. per day	10 per day				
	Dock labourers	4s. 3d. per day	Average, 8½ per day				
Belgium (1891)	Miners	3s. 8d. per day	10 per day	1½d. per lb.	Beef, 6d. to 8d. per lb.	3s. to 4s. per week	Working classes very badly housed. * Work sometimes 36 hours, and then idle for days, as in some British seaports.
	Carpenters	3s. per day	10 to 11 per day				
	Ironfounders	2s. 5d. to 3s. 6d. per day	10 to 11 per day				
	Blast-furnace men	2s. 6d. to 6s. 6d. per day	10 to 11 per day				
	Day labourers	2s. to 3s. 2d. per day	10 to 12 per day*				
Germany (1890)	Building trades	5s. 8d. per day	10 to 12 per day	1d. to 1½d. per lb.	6d. to 8d. per lb.	3s. to 4s. per week	... ...
	Cabinetmakers	5s. 6d. to 6s. 6d. per day					
	Day labourers	3s. to 3s. 6d. per day					
Russia (1891)	Cotton-spinners (men)	£1, 8s. 4d. per month	11 per day	Rye bread, 1d. per lb.	Beef, 5d. per lb. Potatoes, 3s. 6d. per bushel	Bad cottages	Owing to the low wages earned by Russian workmen, they are unable to obtain nourishing food in sufficient quantities.
	Machine builders	£2, 8s. 8d. per month					
	Miners	3s. 2d. to 4s. per day					
	Day labourers	1s. 5d. to 3s. per day					
United States (See p. 376.)					Beef, 4d. to 5d. (Boston)	10s. 2d. to 12s. 10d. per week (Boston)	Chicago.—Labour nominally high, difficult for labourer to "make both ends meet." House rent is 9s. to 12s. per week; beef, 5d. to 10d. per lb.

APPROXIMATE WAGES, &c. (*continued*).

Country.	Trade.	Wages.	Hours.	Bread.	Meat.	Rent of Workman's Dwelling.	Remarks.
Massachusetts (1892)	Skilled labour (highest)	£3 per week	...	2½d. to 3d. per lb.	Bacon, 5¾d. to 7d.	...	Colonel Carroll D. Wright, in his work on "The Industrial Evolution of the United States," writes:—"Wages are highest in the Western States, where cost of living is relatively higher. Wyoming leads, with an average annual wage for male operatives, including skilled and unskilled, but not piece-workers, of 806 dollars, and is followed by Colorado with an average of 685 dollars. The industry reporting the highest average wages for the same class of employés is the manufacture of paper patterns, the average being 773 dollars. Comparatively few establishments and employés are reported for the States and industries showing the very highest wages. These averages, therefore, cannot be accepted as a true indication of the general average for the United States."
	Unskilled labour (lowest)	£1, 3s. per week	...				
	Tailors (men), highest	£2 to £2, 5s. per week	10 to 14 per day				
	„ (women)	£1 to £1, 4s. per week					
	Cotton-spinners	4s. to 6s. per day	10 per day				
	„ weavers	4s. per day					
	Clothing and miscellaneous textile trades	Average, £1, 1s. per week (women)					
Pennsylvanian District	Coal-miners	Average, 7s. 10d. per day	Irregular	...	...	...	... ...
	Agricultural labourers	Average, £1, 9s. per week (winter); £1, 18s. 6d. per week (summer)	Sunrise to sunset				
Maryland	Engineers	10s. 4d. per day	10 per day	...	...	£1, 12s. to £2, 8s. per month	.. ...
	Carpenters	8s. 9d. per day					
	Labourers	6s. 4d. per day					
California (1895)	Miners	12s. per day *	...	...	...	...	* Cost of board and lodging, 12s. to 16s. per week. Only a moderate demand for mechanics. Plumbers, cement-workers, and bricklayers mostly work for themselves at high wages and steady work.
	Farm hands	£5 to £6 per month (with board and lodging)					
	Ranche hands						

Canada, Manitoba (1895)	Lumbermen	£4 to £5 per month	12 per day	1¼d. to 2d. per lb.	Beef, 3½d. to 6d. Bacon, 5d. to 8d. per lb.	£1, 4s. to £2 per month	...	...
	Mechanics	6s. to 10s. per day						
	Miners	10s. per day	10 per day					
	General labourers and navvies	5s. to 8s. per day						
	Farm hands	£3, 6s. per month (summer), with board	10 to 14 per day					
British Columbia	Lumbermen	£8 per month	12 per day	1¼d. to 2d. per lb.	Beef, 3½d. to 6d. per lb. Bacon, 9d. per lb.	£1 to £2 per month Log-house cost £6 to £12 to build	...	...
	Mechanics	12s. to 16s. per day	50 to 54 per week					
	Labourers	6s. 9d. to 10s. per day						
	Ranche hands	£4 to £7 per month (summer), with board	10 to 14 per day					
Montreal	Building trades	6s. to 10s. per day	60 per week	1¼d. to 2d. per lb.	Beef, 3½d. to 6d. per lb. Bacon, 5d. to 8d. per lb.	£1, 4s. to £1, 12s. per month	...	...
	Navvies and quarrymen	5s. per day and upwards						
	Boilermakers	6s. per day and upwards						
	Weavers (men)	6s. per day						
Argentine Republic, Santa Fé (1895)	Ordinary labourers	5s. per day	...	3½d. per lb.	Beef, 5½d. to 7½d. per lb.	15s. to 20s. per month. Rooms can be rented at 8s. 4d. per month and upwards.	Clothing is enormously dear, as it is brought from Europe, and pays heavy gold-duties.	
	Agricultural labourers	12s. 6d. per week (with board and lodging)						
	Mill hands	Average, £1 per week (with board and lodging)						
	Railway guards	About £2, 10s. per week						
	Railway porters	About £1, 2s. per week						
	Engine-drivers	About £2, 15s. per week						
	Stokers	£1, 17s. 6d. per week						
	Fitters and blacksmiths	6s. 8d. to 8s. 4d. per day						

APPROXIMATE WAGES, &c. (*continued*)

Country.	Trade.	Wages.	Hours.	Bread.	Meat	Rent of Workman's Dwelling.	Remarks.
Australia, New South Wales (1895)	Day labourers	5s. to 7s. 6d. per day	8 per day	1½d. per lb.	Beef, 3d. to 6d. per lb. Bacon, 7d. to 11d. per lb. Mutton, 1d. to 3d. per lb.	9s. to 13s. per week (Sydney) 6s. to 10s. per week (country towns)	Wages fluctuate considerably, according to demand for labour.
	Mechanics	8s. to 10s. per day					
	Bricklayers	8s. to 10s. per day					
	Carpenters	9s. 6d. per day					
	Miners (coal)	8s. to 10s. for 8 hours	44 per week				
	Miners (gold)	45s. to 50s. per week					
Victoria	Building trades	6s. to 8s. per day	8 per day	1d. to 1½d. per lb.	Beef, 2d. to 7d. per lb. Bacon, 8d. to 10d. per lb.	7s. to 12s. per week (Melbourne) From 5s. per week (country districts)	Wages fluctuate considerably.
	Blacksmiths	7s. to 11s. per day					
	Boilermakers and platers						
	Miners	40s. to 50s. per week					
	Agricultural labourers	10s. to 20s. per week, with board and lodging (more at harvest-time)	..				
	Mowers	23s. 9d. per week (with board and lodging)					
	Shearers	15s. to 16s. per 100 sheep (with board and lodging)					
Western Australia	Carpenters	8s. to 10s. per day	8 per day	1¾d. to 2d. per lb.	Beef, 6d. per lb. Bacon, 10d. to 1s. per lb.	7s. to 9s. 6d. per week (towns) 5s. per week (country)	There are considerable fluctuations in wages, especially where gold is raised.
	Engineers	10s. to 13s. per day					
	General labourers	6s. to 7s. per day					
	Gold-miners (Kimberley)	£4 per week	44 per week	1s. 1d. per lb.	Beef and mutton, 6d. to 8d. per lb.		

New Zealand (1895)	Builders	8s. to 12s. per day	8 per day	1d. to 1½d. per lb.	Beef, 2d. to 4d. per lb.; Bacon, 9d. per lb.	5s. to 10s. per week (towns); 3s. to 6s. per week (country)	
	Shipwrights	8s. to 14s. per day					
	Shoemakers and tailors	7s. to 10s. per day					
	General labourers	5s. to 8s. per day					
	Miners	8s. to 10s. per day					
	Woollen-mills—						
	Men	45s. to 55s. per week					
	Women	22s. to 26s. per week					
	Farm labourers	12s. to 22s. per week (with board and lodging)	...				
South Africa, Cape Colony (1895)	Bricklayers	£3 per week	8½ to 9 per day	1½d. to 3d. per lb.	Beef, 4d. to 6d. per lb.; Bacon, 8d. to 1s. 3d. per lb.	7s. 6d. to 15s. per week	Much higher wages are often paid mechanics, ranging from 20s. to 25s. per day; foremen, £10 per week; black labour (Kaffirs), £3 per month, with rations and lodging extra. Food and lodging are proportionately high. (For Johannesburg and S. A. Chartered Co. see next page.)
	Carpenters						
	Blacksmiths						
	Waggon and coach builders	£2, 14s. to £3 per week	9½ per day				
	Labourers, Cape Town (coloured)	£1, 4s. per week	8½ to 9 per day				
	Agricultural labourers	£1 to £1, 10s. per month (with board and lodging)	...				
	Miners (Kimberley)	16s. 8d. per day	8 to 12 per day	2½d. to 3d. per lb.	Bacon, 8d. to 1s. 3d. per lb.	Four-roomed iron house, about £2 per week	
	Engineers (Kimberley)	16s. 8d. to 20s. per day	9 to 10 per day				
	Labourers, coloured (Kimberley)	15s. to 18s. per week	...				

APPROXIMATE WAGES, &c. (*continued*).

Country.	Trade.	Wages.	Hours.	Bread.	Meat.	Rent of Workman's Dwelling.	Remarks.
Transvaal and S. A. Chartered Co.'s Territory (1895, 1896)	Miners Enginemen and stokers Boilermakers Blacksmiths Fitters Carpenters	£4 to £7 per week £5 to £7 per week £7 per week £6 to £7 per week	8 to 12 per per day	2½d. to 3d. per lb.	Beef, 4d. to 6d. per lb. Bacon, 9d. to 11d. per lb.	One-roomed iron shanty, earth floor, 10s. per week. Four-roomed corrugated iron house, £2 per week	Mechanics of all kinds usually find ready employment, but at the time of writing this, Jameson's raid and the native rising make all estimates exceptional so far as S. A. territory is concerned. Eggs have been sold at 35s. per dozen, and other food in proportion.
Japan		Tokyo. Per Week. / North Nipon. Per Week.					
	Carpenters, joiners, &c.	25s.	16s.				
	Compositors	23s.	14s.				
	Workers in lacquer	21s.	13s.	...	...	...	... ...
	Field labourers (women	10s.	6s.				
India (1890)	Native labour (coolies)	3½d. to 7½d. per day	8 to 10 per day	...	...	The labouring classes live in mud-huts, for which they pay next to no rent; the highest being about 1s. per week	Their food is usually cheap grains, with fruit and vegetables.
	„ bricklayers „ masons „ carpenters „ blacksmiths „ tailors „ turners, &c.	7½d. to 1s. 6d. per day					
Mexico (1895)	Native labour	Average, 1s. per day	...	...	...	...	... ...

APPENDIX II.

THE GROWTH OF LARGE CITIES.*

	Inhabitants.	Inhabitants.	Increase.
		1894.	Per Cent.
London	2,803,989 (1861)	4,349,166	55.1
Paris	1,500,129 (1861)	2,424,705	61.6
Berlin	547,571 (1861)	1,767,639	222.8
Vienna	553,970 (1857)	1,465,537	164.5
New York	805,651 (1860)	1,957,294	142.9
Tokio	... (1886)	1,214,113	...
Philadelphia	562,529 (1860)	1,139,457	102.5
Brooklyn	266,661 (1860)	1,055,100	295.6
St. Petersburg	550,341 (1858)	954,400	73.4
Bombay	566,119 (1861)	821,764	45.1
Moscow	386,370 (1858)	753,469	95.01
Glasgow	394,864 (1861)	686,820	73.9
Manchester	357,979 (1861)	520,211	45.3
Liverpool	443,938 (1861)	691,394	55.63
Birmingham	296,076 (1861)	492,301	66.2
Leeds	207,165 (1861)	388,761	87.6
Dublin	254,808 (1861)	349,594	37.1
Munich	148,201 (1861)	390,000	163.1
Breslau	145,589 (1861)	360,660	147.7

* Compiled from *Whitaker's Almanack*, 1895.

APPEN

STATISTICS OF LEADING COUNTRIES IN THE CIVILISED WORLD FROM *WHITAKER'S ALMANACK*, 1896 *), WITH REMARKS

Name of State.	Form of Government.	Area.	Population.	Public Debt.	Revenue.
		Square Miles.		£	£
Great Britain and Ireland	Monarchy	121,068	37,750,000	660,000,000	101,697,304
British Empire (exclusive of Protectorates)	,,	8,760,491	277,809,267	1,194,915,000	238,724,197
France	Republic	204,146	38,343,192	1,241,410,101	136,966,970
Germany	Empire	211,168	49,428,470	91,111,704	62,362,803
Austro-Hungary	,,	261,649	42,813,251	Aus. 332,225,000 Hun. 176,232,189	52,910,000 43,039,126
				508,457,189	95,949,126
Russia	,,	8,450,681	124,000,000	539,346,000	118,025,000
Italy	Kingdom	110,623	30,535,848	505,813,607	69,368,397
Turkey	Empire	1,145,500	22,011,000	180,000,000	16,836,363
Spain	Monarchy	196,173	17,550,216	73,480,867	29,789,053
Portugal	,,	35,843	4,708,178	148,490,103	10,557,465
Sweden and Norway	,,	S. 172,877 N. 124,500	4,873,183 2,001,000	16,172,797 7,974,242	5,498,899 3,359,031
Denmark	,,	14,789	2,185,325	9,586,350	3,226,404
Holland	,,	12,582	4,732,912	91,494,013	10,688,643
Belgium	,,	11,373	6,147,041	88,615,046	15,899,105
Switzerland	Republic	15,469	2,933,334	2,305,120	3,038,405
Greece	Monarchy	24,977	2,187,208	32,984,366	3,738,454
Roumania	,,	46,314	5,376,000	47,585,630	7,214,098
Bulgaria	Principality	38,562	3,305,458	768,810	3,593,977
United States	Republic	3,581,885	62,622,250	197,142,629	62,678,015
Mexico	,,	751,177	10,447,974	16,700,000	8,840,000
Brazil	,,	3,219,000	14,000,000	89,091,007	11,999,956
Argentina	,,	1,212,000	4,200,000	43,366,322	8,143,650
Uruguay	,,	72,172	787,053	25,047,598	2,986,344
Chile	,,	290,741	3,000,000	18,300,000	9,500,000
Peru	,,	455,000	2,972,000	Cancelled	1,400,658
Persia	Empire	636,000	9,000,000	?	1,652,820 (1888)
Egypt	Viceroyalty	494,000	6,806,381	105,475,000	10,075,000
Japan	Empire	147,655	41,388,313	40,422,449	17,783,191
China		4,468,750	300,000,000	41,000,000	25,837,500

* With the permission of the proprietors. † Revolutions, more or less serious, are in 1868. § Previous to war with Japan, the Chinese navy consisted of about 154 vessels, most of which the possession of China.

DIX III.

AT THE CLOSE OF THE NINETEENTH CENTURY (COMPILED ON THEIR MATERIAL AND POLITICAL CONDITION.

Expenditure.	Imports and Exports.	Army. In War Time, including Reserves.	Navy. Total Vessels.	Original Remarks on Condition.
£	£			
93,850,887	682,500,000	..	...	Stable. Consols (2¾ per cent.) rose above 113 in August 1896. Takes the lead in commerce, navigation, and manufactures.
...	1,173,250,000	718,821	300	Very aggressive. Viewed with jealousy by several other Powers.
136,960,323	295,780,480	2,000,000	227 (1893)	Prosperous. Ministry often changing. Seeking colonies. In secret alliance with Russia, hoping to recover Alsace and Lorraine. Industries vast and increasing.
64,327,323	371,200,000	3,350,000	88	Industries increasing. War of classes. Power of Crown great. Seeking new colonies. One of the Triple Alliance.
52,740,000 43,186,115	126,790,209	1,794,125	140	Territory stationary. Industries improving. One of the Triple Alliance.
95,926,115				
112,549,000	132,525,000	2,532,496	268	A despotism. Most aggressive, mainly by diplomacy. Possessions steadily growing. Extremes of wealth and poverty. Feud between autocracy and educated classes.
71,699,807	123,076,462	2,448,308	269	Finances involved. Seeking new colonies. Weakened by defeat in Abyssinia. Italy, Germany, and Austro-Hungary form Triple Alliance.
19,454,545	32,176,000	1,000,000	102	Moribund. Expectant prey of surrounding States, chiefly Russia.
30,797,775	52,458,228	716,000	126	Decadent. Leading colony (Cuba) revolting.
10,516,436	15,302,974	125,057	55	Finances involved. Colonies increasing.
...	35,781,841	452,553	60	Two countries at variance. Norway seeking more independent executive. Both fairly prosperous.
3,359,031	18,041,507	36,000	46	
3,452,915	30,856,000	50,522	37	Stationary. Prosperous.
11,128,333	210,441,666	97,370	121	Stationary. Prosperous.
15,754,700	204,908,000	155,566	none	Industries prosperous. Clerical and Labour party gaining power. No colonies. King, sovereign of Congo State.
3,449,794	58,998,920	485,764	..	Prosperous. Contented. Universally respected. The "playground" of nations.
3,721,426	7,369,989	...	29	Insolvent. Ambitious of extension. Merchants very enterprising. Centre of ancient art.
7,816,897	...	158,000	12	A young, rising, prosperous nation.
3,593,977	6,887,191	195,000	10	Nominally vassal State of Turkey. Courting Russia. Government unstable.
71,466,332	307,901,626	27,167	97	Prosperity increasing. In some respects reactionary. Most enlightened and enterprising. Politicians and public men often corrupt.
8,830,000	15,057,497	27,000	7 (small)	Rich in undeveloped resources.
11,761,726	23,246,520 (exports only)	29,000	32	Rich in resources. Industries growing. Two revolutions in five years.
7,086,511	37,761,700	357,400	28	Prosperous. Not paying full interest on debt.
2,765,957	9,947,450	...	.	Prosperous.
10,000,000	32,324,000	5 600	22	Wealth chiefly agricultural and mineral. Subject to revolutions.†
1,400,658	5,561,237	3,500	4	Prosperous. Vast resources vested in Peruvian Corporation in cancelment of debt.
1,260,700		150,000	...	Decadent. A pure despotism.
9,545,000	21,508,000	British, 3,500 Local, 16,000	...	Increasing in prosperity under British tutelage. Nominally vassal of Porte.
16,911,940	‡ 46,145,608	273,268	62	The rising nation of the East. Much Western enlightenment.
..	53,535,000	1,200,000	See note §	Falling under Russian influence. Seeking to re-establish her prestige. See note §.

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